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PROGRAM-ORIENTED INFORMATION--A MANAGEMENT SYSTEMS COMPLEX FOR STATE EDUCATION AGENCIES. PART I, ANALYSIS AND PROPOSALS. INTERIM REPORT ON A COLLABORATIVE PROJECT "TENTATIVE GUIDES FOR A STATE EDUCATION AGENCY FISCAL, PERSONNEL, AND PROGRAM INFORMATION SYSTEM."

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THIS DOCUMENT IS THE RESULT OF A PROJECT TO CONCEIVE AND ESTABLISH AN INFORMATION SYSTEM FOR FINANCIAL, PERSONNEL, AND PROGRAM ACCOUNTING OF STATE EDUCATION AGENCIES' TOTAL INTERNAL OPERATION. SUCH SYSTEMS ARE DEEMED NECESSARY NOW THAT THE AGENCIES' OPERATIONS ARE STRONGLY AFFECTED BY FEDERAL PROGRAMS AND FUNDS AND ARE THUS A MATTER OF NATIONWIDE INTEREST. THIS STUDY SHOULD FACILITATE DEVELOPMENT OF A BENCH MARK OR BASE FOR A NATIONWIDE DATA EXCHANGE SYSTEM. THE PROBLEM IS TO DEVISE A MEANS (1) TO DIFFERENTIATE AMONG THE VARIOUS SUBSTANTIVE THINGS THAT A STATE EDUCATION AGENCY DOES, (2) TO DETERMINE THE VALUE OF THE AGENCY'S INVESTMENT IN EACH SUBSTANTIVE THING IT DOES, AND (3) TO REPORT THESE MATTERS IN CONCISE, WELL-ORDERED, AND UNAMBIGUOUS FASHION. A RELATED PROBLEM IS THE DEVELOPMENT OF A MEANS WHEREBY THE INFORMATION THUS GENERATED BY EACH STATE EDUCATION AGENCY CAN BE EXPRESSED IN A LANGUAGE AND FORMAT THAT MAY BE UTILIZED IN COMMON BY ALL STATE EDUCATION AGENCIES. RECOMMENDATIONS INCLUDE--(1) RESPONSIBILITY-ORIENTED ASPECTS OF MANAGEMENT SYSTEMS DESIGNED TO ISOLATE DATA PERTINENT TO EACH ORGANIZATIONAL UNIT, (2) PROGRAM-ORIENTED ASPECTS OF THE SYSTEMS COMPLEX DESIGNED TO ISOLATE DATA PERTINENT TO EACH COMPONENT OF THE PROGRAM, AND (3) THE CLASSIFICATION OF ALL COST CENTERS IN TERMS OF A SERIES OF DESCRIPTIVE MEASURES. PART II OF THIS REPORT IS AVAILABLE AS EA 001 171. (HW)

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PROGRAM-ORIENTED INFORMATION

A Management Systems Complex for State Education Agencies

I. ANALYSIS AND PROPOSALS

Burton Dean Friedman
Director of Project

EA 001 170

MARYLAND STATE DEPARTMENT OF EDUCATION
Baltimore 1966

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PROGRAM-ORIENTED INFORMATION

A Management Systems Complex for State Education Agencies

I. ANALYSIS AND PROPOSALS

Burton Dean Friedman
Director of Project

An Interim Report on a Collaborative Project

"Tentative Guides for a State Education Agency Fiscal, Personnel, and Program Information System"

Funded Largely by the U. S. Office of Education under The Elementary and Secondary Education Act of 1965, Title V, Section 505 P. L. 89-10

Administering State: MARYLAND

Participating States: KENTUCKY, MISSISSIPPI, NEW YORK, OHIO, OREGON, SOUTH DAKOTA, TEXAS

Maryland State Department of Education
Baltimore 1966

FOREWORD

This document is one result of a project to conceive and to establish an information system for financial, personnel, and program accounting of State education agencies' total internal operation. Such systems are especially necessary now that the agencies' operations are strongly affected by Federal programs and funds and are, therefore, a matter of nationwide interest. This study should facilitate development of a bench mark or base for a nationwide data exchange system. The project is funded from Title V, Section 505, of Public Law 89-10, The Elementary and Secondary Education Act of 1965.

What is the present level of operation of state agencies? How can progress be measured? Quantitatively? Qualitatively? In short, what are the relationships between program expenditures and effectiveness?

The agencies must develop a nationwide data information system which is broad enough to encompass systems already in existence, now being established, and yet to be devised. The system must be sufficiently flexible to accept new data and new requirements as educational programs evolve. The information system must provide for the organization of reliable data to permit classification, analyses, and maximum use. Obviously, this system will be valuable only if it represents standardization of bases to permit comparability and, ultimately, to permit use in the improvement of management and the achievement of agency purposes. This data system must also make provision for immediate feedback and immediate related data retrieval.

These "guideline(s)" or this "guidebook" may eventually become a national handbook, but this is neither our immediate nor primary purpose. The broader purpose of this project is that of considering a common format for accountability relationships. We may ask, "Is money making a difference in state agency effectiveness, with special focus on each of the Federal programs affecting state agency functions?"

This project should provide certain common criteria for use in measuring the effectiveness of state department of education internal functioning. Therein may be a potential source of strength for state department of education operation as intended in Title V of Public Law 89-10, The Elementary and Secondary Education Act of 1965. The end results, hopefully, should benefit all states, not only the eight states participating in this project.

Success of this project could well influence the strata of function to be reserved to state departments of education.

Obviously, the project direction and dimensions are, and must be, influenced by the need for a high degree of compatibility of data (a) between the state department and local school systems, (b) among all state education agencies, and (c) among the state agencies and the U. S. Office of Education.

For example, when our State Department, and we are sure this is true of other state departments, needs specific projects developed, we invite the local school systems to assist us. In other words, we bring to bear the best resources available. In the final analysis our Department and the local school systems all benefit from this cooperative effort and attack.

We believe this must be the case with this project. All state departments, local school systems, and the U. S. Office of Education will derive benefits, and all will be contributors. For example, the U. S. Office of Education will need to be a full participant, for it must delineate clearly the information needs which it will have to satisfy. All needs—local, state, and national—must be put into the hopper for consideration.

Obviously, no sector of education can be considered in isolation, nor should it be. An information system for state education agency functions and relationships must be couched in a broad, functional context. Thus it clearly will be necessary to relate other studies to this one. Some examples are the current Iowa-based Midwestern States' project, the vocational education information system study, and the work of the Committee on Educational Data Systems. What are their relationships to each other and to the proposals advanced by this project?

The Maryland State Department of Education hopes that the present study will prove to be a positive contribution to the total information task and that our system will prove to be the prototype for other states to adopt and adapt. We anxiously anticipate the favorable outcomes that this data information system project should produce.

JAMES A. SENSENBAUGH
State Superintendent of Schools
Maryland State Department of Education

QUENTIN L. EARHART
Assistant Superintendent
Maryland State Department of Education

PREFACE

This document is one product of a study conducted during the period February-September, 1966. The Maryland State Department of Education was the administering agency; seven other State education agencies participated in the task. I had the privilege of directing the study. After eight months of attention to this matter, I believe that a few points deserve special emphasis. I take the liberty of inserting these value judgments into the record.

1. Unquestionably, in my judgment, a program-oriented information system can be superbly useful to a State education agency. Accordingly, I would urge that each agency develop such a system.

2. There are at least two indispensable prerequisites to a satisfactory system; one, a well-conceived and effective budget system, with provisions for both responsibility-oriented and program-oriented budget processes; and two, fully integrated with the budgeting process, an equally well-conceived and effective accounting system. An information system cannot substitute for budgeting and accounting systems, nor can it be developed in their absence.

3. I suspect that a free translation of the above paragraph might read this way: if an agency has good management and management processes, it can develop a good program-oriented information system, and the information system will make good management even better; but without good management, the information system can be neither adequately designed nor properly utilized.

4. When all agencies have installed appropriate information systems, creation of a genuinely informative interagency data bank will be both feasible and highly desirable.

One further point merits special note:

Each State education agency's set of integrated management systems —systems for budgeting, accounting, information, *et al.*—can and probably must be a unique and independently-established, differently-designed kit of management tools. The several agencies' information systems do not need to be alike.

They do need to be *compatible,* however, in order that interagency data exchanges, data banks, etc., may be established. Compatibility can be achieved with ease. It requires agreement only on a limited set of (using the terminology adopted in this study) "dimensions" and "categories." These should be used in uniform fashion by all agencies. Their use does not materially affect the design of each agency's own program-oriented information system. Data generated by any suitable system can be "translated" into the common language created by adoption of the standard dimensions and categories. I would urge early adoption of the recommended "common language."

BURTON DEAN FRIEDMAN
Director

September, 1966

ACKNOWLEDGMENTS

Many persons were extremely helpful in the opening phase of this study, persons within the Maryland State Department of Education, the U. S. Office of Education, the participating state education agencies, and elsewhere. Maryland's Superintendent, James A. Sensenbaugh; Deputy Superintendent, David W. Zimmerman; Assistant Superintendent (and coordinator of this project), Quentin L. Earhart; Director of Research, Richard K. McKay; Systems Analyst, Robert Bassford; Research Supervisor, R. Christine Hogan; and two successive Chiefs of Audits and Accounts, John W. Powder, Jr., and J. McComb Nichols—all have been courteous hosts, generous with their time, and serious in their critical reviews of project ideas and drafts of reports. So also have William M. Perkins and Arthur J. Le Penetier of the State's Department of Budget and Procurement.

Representatives of the participating state agencies have given most generously of their time, knowledge, and judgments. Names of project "regulars" are listed on the inside front cover. Other persons also have been extremely helpful during visits by project staff in the participating agencies. Notably, in Kentucky state government, L. Felix Joyner, Commissioner of Finance, Roger Buchanan, Budget Director, and Joe Elam, budget analyst, have been helpful critics and advisors.

At the U. S. Office of Education, liaison was provided initially by Adolph J. Koenig, who continued to be a valued consultant even after his formal relationship with the project had ended, and then by Charles E. Trotter, Jr. As the Director of the USOE's Division of State Agency Cooperation, Robert L. Hopper was influential in making the arrangements that permitted the study to be undertaken. E. Glenn Featherston, James E. Gibbs, Jr., John L. Cameron, Allan R. Lichtenberger, Fred F. Beach, Robert F. Will, Charles H. Miller, Kenneth M. Parsley, Jr.—all have been helpful. Drs. Gibbs and Lichtenberger, in particular, have reserved the time needed to maintain an active, serious interest in the study ever since its inception and have served as valued readers, listeners, and critics.

Members of the project staff all have contributed substantially to the progress that we believe has been made. Ronald E. Zechman, of Public Administration Service, has been responsible for developing the technical/professional aspects of accounting, budgeting, and data processing matters;

he is principal author of the second project report, which is a manual that describes in detail the workings of the proposed prototype system, to be installed by the Maryland Department. Rod G. Happel, formerly of Pennsylvania and Alaska State government, and Joseph F. Metz, Jr., of the University of Maryland, have been of major assistance; it was good fortune that they were available for major portions of the project's brief life. And Mrs. Lillian Spicer, who served as project secretary, was a diligent and loyal aide.

The Project Director particularly wishes to acknowledge two very special considerations extended to him:

Dean George R. Waggoner, of the College of Liberal Arts and Sciences, at The University of Kansas, permitted the Project Director to take an extended leave of absence for the purpose of undertaking this study; for that permission, grateful thanks.

Public Administration Service (PAS)* customarily undertakes assignments only when it can assume full institutional responsibility for the results of the work performed. In the present case, PAS extended the compliment and courtesy of agreeing to participate in a project *not* under its own direction. Thanks are most warmly extended to H. G. Pope and G. Michael Morris for accepting the arrangement and for making Mr. Zechman's extended assignment to this study possible. Thanks also are extended to PAS staff members James B. Douglas, Michael A. Meriwether, Kenneth F. Sheehan, and Theodore Sitkoff for their substantial efforts and major contributions.

Final responsibility for the present product, of course, rests with the Project Director, who hopes that the proposals offered will prove to be useful and usable and that the project reports are free from gross errors either of presentation or of substance.

B.D.F.

* Public Administration Service is a nonprofit and nongovernmental organization that has engaged for many years in research, publishing and consulting in the broad field of public administration. Its headquarters are at "1313" (1313 East Sixtieth Street, Chicago 60637), where the Council of State Government and various professional organizations are based.

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PROGRAM-ORIENTED INFORMATION

A Management Systems Complex
for State Education Agencies

I. ANALYSIS AND PROPOSALS

1. SUMMARY OF SYSTEM PROPOSALS

In this report, the product being sought is program-oriented information. The agency under study is the state education agency.*

A state education agency deals with two distinctly different sets of financial data: (1) data reflecting the costs of operating the agency *per se* and (2) data reflecting the value of resources distributed to other educational units via the agency. In this report, attention is limited to the first of these.

Program-oriented information is needed by the agency's own management. Such information also is needed for purposes of exchanging data between and among comparable or related educational organizations. In this report, primary emphasis is placed upon the internal information requirements of agency management. System proposals are believed to be amply justified exclusively in terms of those requirements. System proposals are believed to be justified further in terms of the requirements for exchanges of information, e.g., agency-to-agency, agency-and-USOE relationships, Compact on Education relationships.

System proposals are based substantially on the proposition that program-oriented information must be generated by a "management systems complex" that incorporates planning, programing, budgeting, budgetary accounting, and financial reporting, among other ingredients. A corollary to that proposition is that the several ingredients must be integrated into the systems complex, so that the entire complex may be a compatible and unifying management device.

The several systems must reflect the fact that operations are performed by organizational units of an agency and that heads of such units are held to be responsible and accountable for performance. One phase of budgeting, accounting, and other systems therefore must be organization- or responsibility-oriented. An agency is not created for the purpose of supporting organizational units, however; information ordered to the organizational or responsibility basis is of limited utility.

The several systems must reflect the more fundamental fact: that operations are performed in pursuit of substantive purposes, goals, and

* As utilized throughout this document, the term "state education agency" refers to each of some fifty-five governmental units that perform approximately equivalent tasks in the fifty states, Puerto Rico, and the several territories. Whatever the unit's proper name, "state education agency" refers to the "department of education," "department of public instruction," or other corresponding organization.

objectives; and that operations consist of the performance of substantive tasks, projects, functions, activities. Basically, therefore, budgeting, accounting, and other systems must be program-oriented, i.e., must reveal the cost of resources invested in each type of operation.

Organizational patterns change through time; the particulars of "program" also change through time. For short-term matters, this fact is not a handicap. For longer term planning, however, it is a handicap. Therefore, the current particulars regarding "program" must be expressed in "generic terms," i.e., they must be translated into one or more patterns of language that will permit the accumulation through time of consistent series of data.

The proposals contained within this report accordingly include:

1. Responsibility-oriented aspects of management systems, designed to isolate data pertinent to each organizational unit.

2. Program-oriented aspects of the systems complex, designed to isolate data pertinent to each component of program; the neutral term "cost center" is utilized to identify any substantive component of program which an agency deems to merit separate attention.

3. The classification of all cost centers in terms of a series of descriptive measures or descriptive "languages." Each basis for description is termed a "dimension." For each dimension, a set of "categories" is established. Each cost center, it is proposed, would be categorized on the basis of every dimension established. When the actual or projected costs attributable to a cost center are known, those costs can be reported in the language provided by each dimension (or combination of dimensions) and their categories. If utilized consistently and through time, such language will provide useful sets of generic terms by which to refer to the programs and program components of state education agencies.

Systems proposals are based on an additional proposition: that financial matters—which are not inherently occult or arcane—should be made as transparent, explicit, and unambiguous as possible; they should be comprehensible even to persons who are largely innocent of technical knowledge of accounting or budgeting but who require knowledge of the substantive matters of agency operations.

Substantive matters are those which treat of program: program content; program priorities; program-oriented past, current, and projected costs; possibilities or prospects for program change. These are the fundamental matters at issue in the design of an agency's plan of operations.

Inasmuch as the budget is an expression of the plan of operations, these are the fundamental matters to be expressed in the budget.

An agency has—or ought to have—one comprehensive plan of current operations, and the principal budgetary expression of that plan is—or ought to be—one comprehensive plan of current expenditures, enumerating each program, subprogram, project, or other program component, and indicating the amount of the resources to be invested in each of them. Such a statement would comprise a consolidated and program-oriented expression of the agency's expenditure budget for all current operations. It would be relatively clear to nontechnical (i.e., nonfiscal) persons. If similarly organized, related financial reports, such as those indicating actual expenditures to date, also would be clear.

Budgeting, accounting, and financial reporting must deal simultaneously with collateral matters as well. A plan of expenditures implies a related plan of revenues, expressed in a statement indicating the sources of support for the agency's operations, and indicating the amount of the resources to be received from each source. Such a statement would comprise a consolidated and source-of-support-oriented expression of the agency's budget of the revenues to be used in support of operations. It would be relatively clear to nonfinancial people; related financial reports, similarly organized, also would be clear.

The two sides of the budget would be clear but separate and differently-stated. The revenue side, indicating amounts to be received, would be arrayed to indicate receipts per source. The expenditure side, indicating amounts to be spent, would be arrayed to indicate expenditures per program. The two sides cannot be arrayed identically if each is to be arrayed logically, because they express very different information: one side counts income, but the other counts expenses; one side indicates the origins of money, whereas the other side tells of its destinations.

Connections between the two sides do exist: some revenue items are received subject to conditions regarding the manner of their utilization. Such stipulations prescribe a further collateral problem of budgeting, accounting, and financial reporting.

Pursuant to the proposition that financial matters should be made comprehensible, two comparatively innovative accounting and budgeting matters are proposed; together, they provide the necessary clarity in the expression of each "side" of the budget and permit performance of the collateral task of observing the restrictions that may govern the utilization of revenue items. Proposed are:

1. The use of the "single fund accounting" concept, either literally (if not precluded by legal or regulatory matters) or figuratively, i.e., by simulation.

2. The use of "funding plans" as a mechanism for establishing explicit and unambiguous linkages between (a) program content and (b) sources of financial support.

The entire systems complex is designed to emphasize agency program matters rather than other matters of intrinsically lesser importance. A state government establishes and maintains its education agency so that the agency may conduct activities and exercise leadership with respect to several substantively significant matters of program. Even the agency's organizational structure, in that sense, is a peripheral matter; so also is the agency's pattern of funding arrangements. Putting first things first, the principal preoccupation of agency management must be with program-oriented matters; accordingly, the primary orientation of management's systems complex must be to program matters.

The primary task of budgeting, accounting, information reporting, and related systems must be to illuminate the substantive matters of each state education agency's program. A complementary, but intrinsically lower-priority task, is to illuminate the relationships among (a) the agency's program components, (b) the agency's organizational structure, and (c) the financial structure through which funds are received for conduct of agency program.

Under some systems, there is a tendency for the tail to wag the dog. Attention is so heavily concentrated upon funding arrangements that it is diverted away from program matters. Peripheral questions become major preoccupations; e.g., whose salaries shall be paid from which revenue item? and which revenue sources paid for which items of equipment? The accounting and reporting of expenditures tends to be couched in terms of funding arrangements, which are incidental, rather than in terms of program matters, which are the heart of the matter.

The proposed systems complex is designed to perform all required tasks, without permitting secondary matters to divert attention from mainline problems. Single fund accounting greatly facilitates the basic task of relating cost data to the substantive components of agency program. It also facilitates the task of relating cost data to the organizational units of the agency's administrative structure. The use of funding plans, in conjunction with single fund accounting, greatly facilitates the companion task of tracing the relationships between expenditures and the agency's funding struc-

ture. Under the arrangements proposed, each task can be performed with precision and clarity, with due attention to creation of a complete audit trail, and with due attention also to the restrictions or limitations that may govern the agency's use of money received from each revenue source. The several tasks are sufficiently segregated so that none is permitted to disrupt the others.

Employment of the proposed systems will permit main-line questions, rather than peripheral ones, to be featured. A main-line, program-oriented question might be: what is the agency doing—and what has it accomplished—with respect to a specified problem? Program-oriented budgeting, accounting, and information reporting can illuminate that matter by providing past, present, and projected data regarding the magnitude of the agency's investments in the problem. These program-oriented questions and answers are the proper objects of an agency's attention. When they have become major preoccupations, the peripheral questions—who shall be put on the Title XXI payroll?—will receive only the attention that their limited significance requires.

2. SCOPE OF STUDY

The present study is held within rather narrow limits that are readily defined.

1. The problem under consideration is to devise a means:
   a. to differentiate among the various substantive things that a state education agency does;
   b. to determine the value of the agency's investment in each substantive thing it does; and
   c. to report these matters in concise, well-ordered, and unambiguous fashion.
2. The related problem undertaken is that of devising a means whereby the information thus generated by *each* state education agency can be expressed in a language and format that may be utilized essentially in common by *all* state education agencies.

* * *

A very few further comments may be in order.

First, it will be noted that this is a problem dealing with an educational *management* information system, calculated to permit management of a

state education agency to become informed about its own agency's work. It therefore is quite different from the parallel system—e.g., a "basic educational data system"—that an agency utilizes to produce and disseminate comprehensive information regarding the educational system of its state. A comprehensive educational data system generates information regarding students, teachers, and school facilities, finances, and programs. The state education agency's management information system generates data regarding the agency's own participation in the educational system. Both systems may be regarded as segments of a "total information" package, but each is a separate unit.

Second, the agency is an integral part of the educational system, and "the various substantive things that an agency does" are chosen on the basis of the condition and needs of the educational system. The utility of the agency's operations, moreover, is measured in terms of their effects upon the condition and needs of the educational system. The basic educational data system and the agency's management information system therefore are closely related, even though they are discrete units. Data from the basic system—in the long run—will be used to assess the facts revealed by the management system. For example, when an agency is able to state(on the basis of its management information system) precisely how much it spends on each component of its own program of operations, it will utilize data drawn from the basic system in order to help determine whether it is placing too much, too little, or just exactly the proper amount of emphasis on each phase of agency operations. The present study does not undertake to predict how such determinations will or should be made; this study undertakes to enable management to determine how much it *is* spending on each component of its program, not how much it *ought* to spend.*

Third, a state education agency operates under a single management, which employs an interrelated set of management systems: e.g., budgeting, planning, programing, accounting, cost accounting, payroll accounting and personnel record-keeping, inventories, *et al.* An internal management information system ought not stand apart from other management processes. On the contrary, it should be integrated into the management systems complex and should supplement, supplant, or be consolidated with other processes. In the present study, rather than merely to indicate that the management information system *ought* to be so integrated, recommendations are made regarding means by which it *can* be.

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* The knowledge would be sterile if it were not utilized, of course. The uses of information system outputs are explored in Appendix B, which in effect offers a rationale for the development, adoption, and use of information systems.

Fourth, it may be noted that the fifty-five state education agencies share a strong family resemblance, so to speak, and are in some respects alike. Each agency, on the other hand, is in some respects unique, and differs from the others in size, organization, environment, and activity. Each agency has its own complex of management systems, and each—if it undertakes to establish a management information system of the type herein recommended—may devise unique methods for incorporating a program-oriented information system into the management complex. The raw data generated by each agency's system therefore can be predicted to be tailored exclusively to the agency's own internal management needs and methods. Each state education agency, in other words, will develop its own "language" of program-oriented management information.

The first three of the foregoing points suggest the nature of the solution to the principal problem addressed by this study: to devise a means for determining the cost of each substantive activity of a state education agency. The fourth relates to the collateral problem: to enable *all* such agencies to exchange information. The solution to that problem is regarded as a matter of *translation*: agencies need not pretend to adopt identical systems; they do need to make arrangements for translating the information generated by each system into a compatible common language and common format. Recommendations are offered regarding the means by which translation may be achieved very readily.

3. SYSTEM COMPONENTS

The information system relies upon and should be integrated with other management system ingredients. The ingredients include the following:

1. *Responsibility-oriented budgeting.*—Reference here is to the aspect of the total planning/programing/budgeting process that is oriented to the organizational structure of the agency. It is "responsibility-oriented" because it highlights the amounts of money and of personnel for which the director of each organizational unit shall be the responsible administrator.

2. *Program-oriented budgeting.*—Reference here is to the aspect of the planning/programing/budgeting process that is oriented to the substantive content of the agency's work. It is "program-oriented" because it highlights the programs, subprograms, projects, and—under whatever other terms may be employed to describe them—other components of the total program of work undertaken.

3. *Responsibility-oriented accounting.*—Reference here is to the aspect of the expenditure accounting process that is designed to reflect the financial activity and financial status of the amounts of money set aside for use as authorized by each responsible administrator. The sum of money thus set aside may be referred to as an appropriation, allocation, apportionment, allotment, etc. That sum is recorded in the accounts; commitments to expend money and actual expenditures of money are charged against it; and at all times the accounting is intended to indicate the available balance of the original sum that, thus far, remains uncommitted.

4. *Program-oriented accounting.*—Reference here is to the aspect of the expenditure accounting process that is designed to reflect the financial activity and financial status of the amounts of money set aside for use—as planned—for the performance of each component of the agency's total program of work. A sum of money thus set aside for use in a specified program component may be referred to as an appropriation, allocation, apportionment, allotment, etc. Under whatever name such a sum is reserved, the sum is recorded; expenditure transactions are charged against it; and the accounting is intended to indicate the portion of the original sum that, at any time, remains as an uncommitted available balance.

5. *Revenue budgeting and accounting.*—Reference here is to the segments of the planning/programing/budgeting process—and to the related accounting—that are designed to anticipate, estimate, and record the sources and amounts of money that are prospectively or actually available for use by the agency. The intent is to know, at all times, from each source and from all sources combined, the amounts of revenues that are anticipated, the sums thus far received, and the balancing amounts that are estimated but not yet collected.

6. *General accounting and financial reporting.*—Reference here is to the processes by which the agency summarizes its financial operations, determines its financial condition, and reports on all related matters. These matters include the attribution of verifiable relationships between (a) revenue amounts received from specified sources and (b) the expenditures incurred in the conduct of the enterprise; in part, the purpose is to demonstrate that the agency has complied with substantive or other restrictions that may govern the use of each revenue item.

7. *Payroll accounting.*—Reference here is to the processes by which: salaries and wages are paid to employees; matters of

deductions, taxes, and related benefit costs are dealt with; and the determinations are made regarding the portions of total personnel services that shall be charged against each responsibility-oriented and each program-oriented appropriation or allotment account.

8. *Expenditure analysis and distribution.*—Reference here is to the processes by which expenditure transactions are examined and—regardless of the account to which they may originally have been charged or from which they caused disbursements to be made—their values are finally determined to constitute proper charges against specified responsibility- and program-oriented accounts.

4. BUDGET AND BUDGETARY ACCOUNTING: GENERAL

The budget is an agency's plan of operations. The plan can be expressed in words. It can be expressed in numbers. It can be expressed in dollars. In the normal course of events, it is expressed in all three ways.

The processes termed budgeting, programing, and planning all contribute to the confection of the budget. The budget expresses the conclusions reached by an agency regarding one segment of time and the actions to be taken during that time in pursuance of matters that have been studied, planned, and programed. The course of action requires the expenditure of human effort and the utilization of physical and material resources.

The human effort must be compensated in money. The physical and material resources must be acquired, distributed, and maintained through the expenditure of money. Money therefore is carefully focused upon in a budget, which must contain both a revenue plan and an expenditure plan for the specified period of time.

A budget provides that operations shall be conducted; money therefore must be allocated among identifiable operations—that is, among substantive parts of the total agency program.

Program components are carried out by organizational units of the agency—its divisions, bureaus, and sections; money therefore must be allocated among the several organizational elements.

To conduct the operations, an organization pays salaries and wages; buys other services; purchases materials, supplies, and equipment; may acquire land or buildings; and may expend money in other ways. In governmental accounting terminology, these several categories of "things" acquired are referred to as "objects of expenditure." The money to be

spent by an organization, in pursuit of a program component, therefore can be allocated among the several objects of expenditure.

There are two distinct "sides" to the budget: one reflects revenues and the other indicates expenditures. Together, they express the plan of operations for a specified period of time. Prior to the start of that period, attention necessarily is focused upon intentions or expectations. During and after that period of time, attention moves to actual events. That is, early attention is focused upon the amounts of revenue that are estimated or requested, and to the amounts of expenditures that are planned. Later, increased emphasis is placed upon the revenues actually received and the expenditures actually incurred; also, attention is directed to the relationship between the estimated and actual amounts that correspond to each budget item.

The accounting system can be utilized to order and report on these matters in concise and comprehensible form. An accounting system necessarily records and produces a complete record of the revenues that actually are received and of the expenditures that actually are disbursed. It is not at all difficult for accounting procedures to be so arranged that estimated amounts and actual amounts can be presented side by side in financial reports. All that is required is that the budget be recorded in the accounts as one formal set of accounting entries.

If the budget is recorded in the accounting records (in fact, if and *only* if the budget is so recorded), an accounting system can provide the budgetary information upon which attention properly is focused before, during, and after completion of a budget period. For each budget item, whether of revenue or of expenditure, the required information includes the estimated or planned amount, the actual amount, and the difference between those two amounts.

Thus a single set of revenue accounts is required, one account for each source and type of revenue. The amount of estimated revenue must be recorded in each account. The amounts of actual receipts must be recorded. At all times, each account can be made to reflect the three critical items: the estimate, the total of receipts to date, and the amount that was anticipated but is thus far not received; the latter figure is a balancing amount, simply derived (estimated minus actual equals unrealized revenue).

Similarly, a set of expenditure accounts is required, one account for each segment of the expenditure side of the budget. In each account, the amount authorized for expenditure must be recorded. As they are made, actual expenditures must be recorded. At all times, the expenditure ac-

count can reflect the amount authorized, the total expended to date, and the balancing amount, which is the unexpended balance of the total authorized. Preferably, a fourth item enters into the account and alters the equation; that item is a record of "encumbrances," which are expenditure items that are firmly committed but not yet incurred. Encumbrances normally represent purchases that have been made but on which delivery has not yet been completed. The full equation in an expenditure account then reflects four items: the amount authorized minus the total of expenditures-plus-encumbrances equals the uncommitted balance of the original authorization.

Given these two sets of accounts, the sums of account balances provide a concise summary of the budget and its status at any point in time, with respect both to revenues and to expenditures.

The information provided by a revenue account, for example, would include the following:

Revenue Source	*Estimated Revenue*	*Revenues Received*	*Amount Unrealized*
"Ear-marked" Tax "A"	$50,000.00	$23,540.00	$26,460.00

The information provided by an expenditure account would include the following:

Budget Unit	*Authorization to Expend*	*Amounts Now Encumbered*	*Expended to Date*	*Available Balance*
Project "X"	$84,000.00	$ 1,200.00	$32,490.50	$50,309.50

An information system must draw upon budgetary and accounting data. If the budget is designed to reflect both responsibility-oriented and program-oriented matters, and if the budget is both recorded and monitored by the accounting system, information system requirements can be met with relative ease. If these criteria are not met, it is quite unlikely that information system requirements can be satisfied in any other manner. It is for that reason that considerable attention is addressed in this document to accounting and budgeting procedures, not because they should be considered only as parts of an information system, but because their effectiveness and clarity are essential requisites of an information system.

5. TWO ORIENTATIONS: RESPONSIBILITY AND PROGRAM

The budget expresses a plan of expenditures. The expenditure plan can be expressed in terms of the substantive content of the agency's work;

thus expressed, it is "program-oriented." The expenditure plan also can be expressed in terms of the organizational units that conduct the work; thus expressed, it is "responsibility-oriented" or "organization-oriented." Expressed either way, it remains *the* plan of the agency. If the total price tag carried by the plan is $5,000,000 when expressed on one basis, it remains $5,000,000 when expressed on the other.

Every bit of work provided for in the plan must form a part of the substantive content of the agency's operations; it also must be performed by some organizational unit of the agency. Any expenditure incurred by the agency must be incurred (a) in pursuit of some aspect of program and (b) as authorized by a responsible officer of an organizational unit of the agency. All expenditures can be planned in both ways; all expenditures can be accounted for in both ways.

Responsibility-oriented Budget and Accounting.—For a budgetary period, each organizational unit is authorized to incur expenditures up to the limit of a specified "allocation." For each such allocation, an account is required. To the account, entries are posted as transactions occur; entries may record increases or decreases in the amounts allocated, in the amounts encumbered, and in the amounts expended. At all times, as illustrated previously, each responsibility-oriented account would indicate the following:

Budget Unit	*Allocation*	*Encumbered*	*Expended*	*Available Balance*
Division 1 to Division 99	$	$	$	$
Total Budget	$	$	$	$

Added together, the allocations to all divisions (or other organizational units) equal the total provided by the budget. Similarly, added together, the sums of encumbrances, expenditures, and available balances must indicate the net current status of the total budget.

Program-oriented Budget and Accounting.—For the same budgetary period, the agency planned to incur expenditures up to specified limits in the performance of each substantive bit of work in its total program. In this study, each such "bit" is referred to as a "cost center." An allocation of money is made to each "cost center." For each cost center, an account is required. To the program-oriented cost center account, entries are posted as transactions occur; transactions may represent changes in the amount allocated, or they may represent encumbrance or expenditure items chargeable to the account. Each expenditure incurred in performance of a particular project, for example, is charged against the account that represents

that project. The same expenditure amount would *also* be charged against the proper responsibility-oriented account, i.e., the account that represents the organizational unit which administers the project or which, though not the administering agent, incurred an expenditure on behalf of the project. At all times, each program-oriented account would indicate the following:

Cost Center	*Allocation*	*Encumbered*	*Expended*	*Available Balance*
Project "A"	$	$	$	$
Operation "B"				
Task Force "C"				
Group "X"				
Study "Y"				
Task "Z"				
Total Budget	$	$	$	$

Two Parallel Sets of Accounts.—The plan of expenditures is reflected in two parallel sets of accounts. The same total of allocations is shown in each set. The same expenditures are shown in each set. In an overall sense, either set of accounts will indicate, at all times, the total budgeted and the totals of encumbrances outstanding, expenditures incurred, and the uncommitted balance yet available.

The maintenance of two parallel sets of expenditure accounts requires that each transaction be coded with reference to two criteria: the organizational unit responsible for initiating the transaction and incurring its cost, and the program-oriented "cost center" (e.g., the task or project) to which the transaction is chargeable. Where accounting practice includes a system for coding transactions by object of expenditure, the appropriate object code also is required.

Both sets of account balances are useful for purposes of analysis. For purposes of analysis by object of expenditure, use is made of individual transactions rather than of account balances.

6. THE COST CENTER

The concept of the "cost center" is crucial to an understanding of this document and of the information system here proposed. All "program-oriented" budgeting, accounting, and reporting aspects of the information system are built upon the identification and use of a set of "cost centers."

Simply stated, a cost center is conceived of as: the smallest segment of "program" that is separately recognized in the agency's records, accounts, and reports.

A cost center may represent what the agency thinks of as a program, a subprogram, a project, a subproject, or any other component of its "total program." New cost centers may be established at virtually any time. The use of old cost centers may be discontinued at virtually any time. At all times, the complete set of cost centers recognized in the agency's budget, budgetary accounts, and information system must reflect the total agency program.

Some parts of an agency's program are regular, ongoing, recurring segments of its work; cost centers that represent these segments will appear consistently in budgetary, accounting, and information system records. Other parts of an agency's program are one-time, short-term, or nonrecurring segments of the work; the "project" that is producing this study is an example of a nonrecurring item. Cost centers that represent such short-term, nonrecurring, or special items will appear in budgetary, accounting, and information system records only during the fiscal periods spanned by their relatively brief existence.

The addition and deletion of cost centers will reflect the truism that a state education agency's total program of work is subject to change and that such change—whether major and marked or minor and relatively imperceptible—must be recognized in the agency's records.

Cost centers are items for which costs shall be separately recorded and accumulated. Cost centers therefore are the basic blocks used to build a budget or a report on program-oriented operations of the agency. The total budget for an organizational unit of the agency is the sum of the budgetary provisions made for each of the cost centers that comprise the work of that organizational unit. The total budget for a "program" of the agency is the sum of the budgetary provisions made for all of the cost centers that are deemed to comprise that program.*

The "program-oriented" budgeting of anticipated expenditures consists of the allocation of moneys for use in the work represented by cost centers. The related program-oriented accounting of actual expenditures consists of the identification of costs incurred, the attribution or distribution of actual costs to the several cost centers, and the accumulation of totals of actual costs that have been determined to be chargeable to each cost center.

Each expense incurred by the agency can be attributed and charged to the account of a cost center or combination of cost centers. The sum of all items charged to all cost centers is the sum of the agency's expenditures. The sum of expenses of all cost centers related to one division or other organ-

* An elaboration of this point appears in *Appendix A*, in a discussion of *"Program" Dimensions.*

izational unit of the agency must also be the sum of the expenditures charged to that unit. The sum of expenditures charged to the cost centers included within a "program" of the agency is also the total of expenditures chargeable to that program.

Summary.—A cost center is the smallest segment of "program" that is separately recognized in the agency's records, accounts, budgets, and reports. The cost center is the building block utilized to construct the agency's program-oriented budget and its information system's program-oriented reports. A cost center may be established, or its use may be discontinued, virtually at any time, in accord with the fact that the agency's program is subject to modification at all times.

Chart 1. COST CENTERS AND RELATED DATA

TWO SETS OF DATA REQUIRED

1. Cost data per se—actual costs as well as projected, requested, or anticipated amounts; direct charges and/or distributed attributable charges; costs subject to further analysis by object of expenditure; costs subject to summation for groups of related cost centers.
2. Classification data—to describe cost centers; to permit automatic grouping of cost centers for study and analysis; to facilitate accumulation of totals for such groupings.

COST CENTERS		RELATED COST DATA	DESCRIPTIVE CLASSIFICATION DATA
Reference: Account or Code Number	Name of Cost Center	Personnel / Money — By Fiscal Period	Dimensions
063	High School Physics Project		
064	Playground Project: Team No. 1		
065	Playground Project: Team No. 2		
066	R & D Study B-19		
	A "cost center" *is* one "bit" of the agency's total program: it is any bit that the agency chooses to dignify by accumulating a record of its costs as distinguished from other costs. A cost center may represent all or a part of a "program," a subprogram," a "program component," a "project." The sum of all cost centers is the total program of the agency.	Costs—in dollars and in terms of personnel—must be determined for each cost center. Costs must be related to fiscal periods: past, present, future. Costs for any fiscal period can be detailed per object of expenditure.	Cost centers can be "translated" and their costs can be expressed via "common denominators," here termed "dimensions." The translation process requires cost centers to be categorized per each of several dimensions. Cost centers can be grouped by category. Thus grouped, their costs can be combined. Total costs therefore can be expressed in terms of each "common denominator," thereby facilitating interagency exchanges of data.
144	Operation "Foresight"		
145	Social Studies Group One		
146	E. T. V. Cycle Four		
147	Evaluation Project Seven		
148	Field Office: North		
149	Task Force "Leadership"		
150	Field Office: Southeast		
▷	State Education Agency Total Program ▷		

7. COST CENTERS: CLASSIFICATION AND COMPARISON

A cost center is one "bit of the program" of a state education agency. For that "bit," it can be determined how much money and the effort of how many staff members represent the cost incurred by the agency in the conduct of its program.

For purposes of an information system, the cost of that "bit" must be susceptible of comparison with related costs incurred (a) during other periods of time and (b) within other similar agencies.

Two modes of comparison are available: direct comparison and comparison via "translation" or via "reduction to common denominators." Each mode can be used advantageously. The second mode—comparison via translation—calls for the cost centers themselves to be described and categorized; use of this mode therefore requires careful preparation, including the development of the "common language" into which information shall be translated.

Direct Comparison.—For direct comparisons, one needs only to identify cost centers and to accumulate their expenses. The costs of Project "X" can be compared directly with those of Project "Y"; and, using the financial history of Project "X," its expenses of this year can be compared directly with its expenses of prior years and with its projected future expenses. These comparisons can be extremely useful, especially for use within the agency, where the differences and similarities between projects are well known and where the limitations of such comparisons are well understood.

Direct comparisons often are either useless or impossible, however, for either of two basic reasons. One: program changes may eliminate a cost center too soon for it to acquire much of a financial history; the year-to-year type of direct comparison may be impossible. Two: the program component that is recognized as a cost center in one agency may not be replicated in any other agency; even assuming replication, terminology may vary so greatly that interagency communication may be garbled; the direct comparison of cost centers on an agency-to-agency basis therefore may be impossible.

In short, there are distinct limits to the use that can be made directly of a list of projects and other cost centers and their past, present, or pro-

jected costs. For certain uses, it is necessary to examine the characteristics of the cost centers and to base subsequent comparisons and analyses on the similarities and differences observed in those characteristics.

Comparison via Translation.—Cost centers are susceptible of description, categorization, and grouping. When grouped on the basis of common characteristics, the costs of a cluster of cost centers can be compared, contrasted, or added. Analyses can be made on the basis of comparisons among such clusters of cost centers and in terms of totals of the quantitative measure (i.e., dollar costs or amounts of staff time invested) obtained for them.

For the classification of cost centers, several bases have been identified. Each such basis for classification is termed a "dimension," and each dimension is expressed in terms of a series of "categories." There are as many dimensions, in this sense, as there are ways of considering the cost centers.*

For example, an agency might find it convenient to invent a dimension termed "Longevity of Cost Centers." Categories within this dimension might include the following: (1) regular, recurring, perennial cost centers for which no end is in sight; (2) relatively short-lived cost centers expected to remain on the books during at least two fiscal years; and (3) one-time, nonrecurring, very short-lived cost centers to be recognized in the accounts during only one fiscal year. When all cost centers are coded in accordance with this three-way split, the cost centers can be grouped accordingly; the agency can determine conveniently, at any time, the amounts of money and staff time being invested in long-, medium- and short-term components of its total program; and the sum of the three component costs is, of course, the gross cost of the total program.

The record maintained for each cost center must contain (a) measures of its expenditures, expressed in dollars and/or in terms of staff time required, during past, present, and projected fiscal periods and (b) notations regarding the cost center's classifications, i.e., a coded expression of its categorization in terms of each dimension that the agency recognizes within the information system. When the records for all cost centers are grouped on the basis of any classification that is recorded, expenditures—of money and staff effort—also are so grouped to permit convenient summary, report, and analysis.

Interagency Comparison.—The several state education agencies, the U. S. Office of Education, the Council of Chief State School Officers, and

* Dimensions and categories are discussed at greater length in *Appendix A*, which also contains proposals for coding patterns to be adopted, as well as an example of cost centers already coded.

others presumably intend and expect that information from all agencies shall be susceptible to uniform reporting and analysis. If this expectation is to be satisfied, several dimensions must be used by all agencies in uniform fashion. Interagency comparisons cannot otherwise be assured. They can be assured if all agencies classify their cost centers in terms of a minimum set of uniform dimensions, each such dimension being expressed in terms of a uniform set of categories. The use or disuse of other dimensions, as individual agencies choose to utilize or ignore them, will neither aid nor hinder the process.

With respect to any given dimension, one cost center fits into one category. With respect to that dimension, all cost centers fit into one category or another. If all cost centers are grouped and summarized on the basis of their categorization within any desired dimension, the resulting report will describe the agency's total program in terms of the dimension chosen. Some such reports will serve internal agency uses only. Others will serve interagency or multiagency needs; with respect to these dimensions, agreement among agencies will be required regarding categories to be established.

8. BASES FOR ANALYSIS: DIMENSIONS AND CATEGORIES

A "dimension" is a basis for classifying and codifying cost centers. There are as many dimensions as there are ways of considering the cost centers. With respect to a given dimension, each cost center is assigned to one "category" among the possible categories provided for within the classification system. Every cost center is subject to categorization in terms of all dimensions. A report may be made on the basis of any single- or multidimensional analysis.

Three points deserve emphasis:

1. Individual transactions are *not* coded and classified by dimension and category. Cost centers *per se*, on the other hand, *are* coded, to indicate their categorization within each dimension. To obtain totals of cost per category, it is unnecessary to deal with individual transaction documents or transaction records. It is necessary only to array all cost centers in groups by category; to determine total costs per category, it is then possible to combine the account totals shown for the cost centers within each category. An example follows:

Analysis based on Dimension "A":

Categories	*Cost Centers Comprising Category*	*Total Cost* of Each Cost Center*	*Cost* per Category*
1	014	$18,000	
	054	22,000	
	087	10,000	
	103	47,000	$97,000
2	002	.....	
	023	.....	
	.....	.....	

2. The use of dimensions and categories does *not* affect the coding or processing of individual transaction documents. Dimensions and categories are used *only* to categorize the program-oriented expenditure accounts that represent cost centers. When a cost center is established in the accounts, the cost center *per se* is categorized in terms of each dimension that the agency's system recognizes. It is so categorized one time; the categorizations are recorded one time, for subsequent reference in the process of grouping cost centers for purposes of analysis.

Therefore, the number of *dimensions* utilized in the system does not materially affect the volume of work, the difficulty of coding, or the number of accounts needed. The number of dimensions controls only the number and variety of analyses that are possible. An agency can add or delete dimensions without significant effect upon the time or effort that will be consumed by operation of the information system.

3. The same cannot be said of *categories,* however. The number of categories within a dimension is the one factor that determines just "how thin the slices" into which the total work of the agency will be divided for accounting and related purposes. The number of categories does affect materially and directly the number of accounts needed; thus it also affects the difficulty of coding transaction documents, the volume of work, etc. Whereas dimensions may be added or deleted without appreciable impact upon the workload, categories cannot be added quite so freely.

With these points in mind, an agency can establish its information system. The system requires that cost centers be identified, that accounts be established in which to accumulate or record cost data pertinent to each cost center, and that cost centers be categorized in terms of each dimension

* "Costs" subject to analysis may be actual or estimated and may represent prior, current, or future fiscal periods in any combination.

which the system recognizes. For each cost center, a series of designators by category would be recorded. An illustration follows:*

Cost Center		Cost Center Classifications by Category Dimensions													
Title	No.	A	B	C	D	E	F	G	H	I					
Project XX	032	01	12	06	99	99	14	03	99	....	....	....	....	....

When all cost centers are so classified in terms of all dimensions, their accounts and cost data can be grouped in accordance with any basis of classification. The number and variety of analyses possible are adequate for virtually any information requirement that relies upon program-oriented cost data.

Dimensions for Internal Use.—For use exclusively within the agency, the number and content of dimensions is a matter of the agency's own management requirements. There is no need for all agencies to utilize all dimensions in common.

Dimensions for Interstate Use.—Several key dimensions, however, must be designed and utilized in common by all agencies. This assumes that the agencies in fact do intend and expect to be able to exchange data expressed in common language.

One "common language" dimension is already available: the coding pattern for "State Education Agency Program Functions," developed by the Division of State Agency Cooperation, U. S. Office of Education. Its codes are the categories for use in connection with this principal dimension.

It is considered desirable, however, that state education agencies also utilize other dimensions in common. Detailed recommendations appear in *Appendix* A. The dimensions dealt with are these:

Function: major functions and subfunctions; in essence, this is a contraction of the USOE coding pattern.

Instructional level: categories represent the grade levels at which agency efforts are directed.

Clientele: categories distinguish among the several clienteles served by each agency.

Subject-matter: categories represent the subject-matter groups which receive attention of the agency.

Purpose: categories differentiate the several purposes pursued by the educational efforts of the agency.

* More elaborate illustrations are contained in *Appendix A.*

The Appendix contains both descriptions of these dimensions and proposed sets of categories to be recognized within each dimension. At the date of this publication, the feasibility of use of these dimensions and categories has been tested only in the abstract and only against the example provided by the Maryland State Department of Education; accounts designed to utilize the recommended dimensions and categories have not yet been tested by the actual practice of a year's budgeting and accounting. The utility of each dimension, as well as the adequacy of the categories within each dimension, can be determined only through such use. It may be anticipated, therefore, that the coding pattern should be reviewed by a multi-state team after several agencies have tested the proposed dimensions and categories.

Chart II. TYPICAL MASTER, TRANSACTION, AND SUMMARY CARDS

COST CENTER MASTER CODE CARD

CARD CODE	CARD	COST CENTER IDENTIFICATION NO.	COST CENTER IDENTIFICATION NAME	COST CENTER CATEGORIZATIONS USOE PROGRAM FUNCTIONS	FP	L	F	C	P	SM	IL	OTHER DIMENSIONS AS NEEDED
			The complete cost center code is included in the Cost Center Master Code Card and is not required to be included in the transaction and summary cards.		FUNDING PLAN	LONGEVITY OF ACCOUNT	FUNCTION & SUBFUNCTION	CLIENTELE	PURPOSE	SUBJECT MATTER	INSTRUCTIONAL LEVEL	

Chart II. TYPICAL MASTER, TRANSACTION, AND SUMMARY CARDS—(Cont.)

ACCOUNTING TRANSACTION CARD

CARD CODE	Card Org.	ORGANIZATION CODE	Cost Center	COST CENTER CODE	Obj.	OBJECT OF EXPENDITURE CODE	Reference Number	Transaction Number	T.C.	TYPE OF TRANSACTION (CODE)	DESCRIPTION (VENDOR'S NAME OR OTHER RELEVANT ENTRY)	DATE	AMOUNT
											This is one "suggested" set of cards to be used in accounting for cost centers.		

Chart II. TYPICAL MASTER, TRANSACTION, AND SUMMARY CARDS—(Cont.)

VARIABLE-USE COST SUMMARY CARD

CARD CODE	CARD	COST CENTER IDENTIFICATION NO.	COST CENTER IDENTIFICATION NAME	CODE PER SELECTED DIMENSION OR DIMENSIONS	SELECTED COST DATA AMOUNTS SHOWN TO VARY AS INDICATED			
				▷	Year 1 e.g., prior	Year 2 e.g., prior	Year 3 e.g., current	Year 4 e.g., future
				▷	Current Year Allocation	Encumbered	Expended	Balance
				▷	Proposed To Management	Proposed To Board	Request To B.O.B.	"Budgeted"
				▷				

9. BUDGET AND BUDGETARY ACCOUNTING: STYLE OF PRESENTATION

In several crucial respects, the two "sides"—revenues and expenditures—of the budget must be correlated. In other major respects, they require quite separate treatment. The budget documents—as well as other elements of a financial reporting system—must be designed to accommodate both sets of requirements: clear, separate treatment of the revenue and expenditure "sides," respectively; and equally clear but correlated treatment of interrelated items from both sides. On the whole, the budget document tends to draw attention separately to revenues and expenditures *per se*; to a lesser extent, it correlates particular sources of revenue and specified items of expenditure. Other elements of the financial reporting system are utilized to clarify further and detail the connections between revenue and expenditure items that are linked by legal provisions or by other special considerations.

The simplest expression of a budget for a fiscal period would need to contain only the following entries:

Estimated Revenues	$ _____
Authorized Expenditures	$ _____
Estimated Surplus (Deficit)	

More elaborate, complex, and informative expressions of the budget—and of each "side" of the budget—can be prepared. In point of fact, a budget is "built" and expressed from two directions at once, so to speak: from the particular to the general, as detailed requests for budget items are aggregated; and from the final aggregate to the particular, as decisions are made regarding the preferred utilization of available resources.

Typically, the major stages of a budgetary cycle include the following: Responsible administrators of segments of the agency develop tentative plans for their units' future operations, and they submit requests for financial support based on those plans. The requests are assembled, aggregated, and reviewed. The total thus requested from within the agency may be vastly greater than the amount that the agency's management is inclined to ask the state's legislature (and others) to provide. A modified package is prepared, and its appropriation is requested. The legislature and other fund-providing bodies reach their budgetary decisions. Agency manage-

ment—now in a position to base decisions on "available" revenues rather than "requested" revenues—again modifies the agency's internal budget (in this context, "agency management" is presumed to include the agency's board, chief executive, and other responsible officers). The agency's budget is then adopted and recorded in the accounts, in "final" form: i.e., as a firm budget, subject to modification only as supplementary appropriations or new grant awards may be made or as management may choose to revise agency plans.

The process just outlined may require relatively formal preparation of three different versions of a proposed budget, as well as subsequent reports on the budget at various stages of its execution. The several versions of the budget ought to be expressed in a consistent style. The style adopted for expression of the budget ought to be compatible with the style required for reports on the budget's execution. The forms utilized for preparation and submission of internal budget requests, furthermore, ought to be compatible in style with the other statements.

A sample set of integrated and compatible forms, reports, and statements follows this discussion.

SUMMARY OF REVENUE—ANTICIPATED/ACTUAL

Source of Revenue	Revenue		Explanatory Notes		
Major Source Groupings and Specific Sources	Amount		Matching Requirements	Restrictions on Use of Revenue	
				Description	Cost Center
A. State Sources 1. 2. 3. 4. 5. 6.					
Subtotal					
B. Federal Government Sources 1. 2. 3. 4. 5. 6.					
Subtotal					
C. Other Sources 1. 2. 3. 4. 5. 6.					
Subtotal					
TOTAL					

Basis of Report		Amount	Distribution Data—Explanatory Notes				
Code/ Ref.	Description ----------		"Mini-Max" (See Note Below)	Charge To Federal Funding	"Matching Amount"	Total Charge To State Funding	Supplied from Nonfederal Restricted Sources
	On this blank form, the "Basis of Report" is not specified. Several bases might be selected and several summaries prepared: Basis: ORGANIZATION Description: DIVISIONS Basis: OBJECT OF EXPENDITURE Description: MAJOR OBJECTS Basis: AGENCY FUNCTIONS Description: MAJOR FUNCTIONS Basis: ELEMENTS OF PROGRAM Description: COST CENTERS Similarly, the "Amount" column is deliberately ambiguous. The "amounts" shown might be sums proposed, requested, assigned, or expended; and several "Amount" columns might be inserted to facilitate comparisons between fiscal periods or between various stages of the budget cycle.						
	TOTAL						

These distributive data will be of maximum relevance and utility on statements which array expenditure amounts per "cost center," i.e., where the basis of control is "Elements of Program" and the descriptive captions are "Cost Centers."

Data entered in these columns are explanatory in that they indicate restrictions, limitations, and contingencies that may affect the execution of the budget or that have affected the distribution of expenses incurred per budget during a period already completed.

"Mini-Max": Provided Total Expenditures Reach This "Minimum," The "Maximum" Amounts May Be Charged Against Federal Government Sources Of Financial Support.

Basis of Report Organization		Amount		Distribution Data—Explanatory Notes				
Code/ Ref.	Description Offices and Divisions		"Mini-Max" (See Note Below)	Charge To Federal Funding	"Matching Amount"	Total Charge To State Funding	Supplied from Nonfederal Restricted Sources
01	State Board of Education						
02	Office of State Superintendent						
03	Division of Research and Development						
04	Div. Administration and Finance						
05	Div. Federal-State Relations						
06	Div. Instruction						
07	Div. Vocational Education						
08	Div. Library Extension						
09	Div. Vocational Rehabilitation						
10	Div. Certification and Accreditation						
	TOTAL						

"Mini-Max": Provided Total Expenditures Reach This "Minimum," The "Maximum" Amounts May Be Charged Against Federal Government Sources Of Financial Support.

Basis of Report Elements of Program		Amount	Distribution Data—Explanatory Notes				
Code/ Ref.	Description Cost Centers		"Mini-Max" (See Note Below)	Charge To Federal Funding	"Matching Amount"	Total Charge To State Funding	Supplied from Nonfederal Restricted Sources
001	Task "A"						
002	Project "B"						
003	Team "C"						
004	Operation "D"						
005	Task Force "E"						
006	Field Office "F"						
007	Study "G"						
008	Group "H"						
009	Study Group "I"						
010	Task "J"						
011	Project "K"						
012	Team "L"						
.....	.....						
.....	.....						
.....	.....						
.....	.....						
142	Project "VI-L"						
143	Team "VI-M"						
144	Operation "VI-N"						
145	Task Force "VI-O"						
146	Field Office "VI-P"						
147	Study "VI-Q"						
148	Goup "VI-R"						
149	Study Group "VI-S"						
150	Task "VI-T"						
	TOTAL						

The agency budget TOTAL remains constant, no matter which "Basis of Report" is utilized.

"Mini-Max": Provided Total Expenditures Reach This "Minimum," The "Maximum" Amounts May Be Charged Against Federal Government Sources Of Financial Support.

Basis of Report Object of Expenditure		Amount	Distribution Data—Explanatory Notes				
Code/ Ref.	Description Objects		"Mini-Max" (See Note Below)	Charge To Federal Funding	"Matching Amount"	Total Charge To State Funding	Supplied from Nonfederal Restricted Sources
01	Salaries and Wages						
02	Technical and Special Fees						
03	Communications						
04	Travel						
05	Food						
06	Fuel						
07	Motor Vehicle Operation and Maintenance						
08	Contractual Services						
09	Supplies and Materials						
10	Equipment: Replacement						
11	Equipment: Additional						
12	Grants, Subsidies and Contributions						
13	Fixed Charges						
14	Land and Fixtures						
	TOTAL						

For such object-based reports, the "distribution data" (usually shown in the right-hand columns) may be deleted, in favor of other types of explanatory notes.

NOTE: The State of Maryland's object of expenditure classification (shown here) is illustrative, but not necessarily recommended for use elsewhere.

The Agency budget TOTAL remains constant, no matter which "Basis of Report" is utilized.

"Mini-Max": Provided Total Expenditures Reach This "Minimum," The "Maximum" Amounts May Be Charged Against Federal Government Sources Of Financial Support.

Basis of Report Any "Dimension"		Amount	Distribution Data—Explanatory Notes				
Code/ Ref.	Description Categories		"Mini-Max" (See Note Below)	Charge To Federal Funding	"Matching Amount"	Total Charge To State Funding	Supplied from Nonfederal Restricted Sources
01	First Category: Comprising Cost Centers #						
02	Second Category Comprising Cost Centers #						
03	Third Category: Comprising Cost Centers #						
.....	Etc.						
	TOTAL						

Cost Centers can be grouped, and group totals developed, in accordance with their categorizations per any dimension or combination of dimensions.

For such dimension-based reports, the "distribution data" (usually shown in the right-hand columns) may be deleted in favor of other types of explanatory notes.

Dimension-based reports may include or exclude details, i.e., may itemize the cost centers that comprise each category or simply show totals by category.

The agency budget TOTAL remains constant, no matter which "Basis of Report" is utilized.

"Mini-Max": Provided Total Expenditures Reach This "Minimum," The "Maximum" Amounts May Be Charged Against Federal Government Sources Of Financial Support.

Chart V. BUDGET PROPOSAL FORMS

Early in each budget cycle, responsible administrators develop plans for forthcoming fiscal periods. They develop budgetary proposals that cover each cost center within their area of responsibility, as well as the overall plan of operations for their organization unit. Budgetary proposals, submitted to agency management for incorporation in agency requests to state and other sources of financial support, should be developed in a uniform pattern. This Chart indicates a typical format.

DETAILED ANALYSES: B. DETAILS PER COST CENTER — BUDGET FORM 4

DETAILED ANALYSES: A. SUMMARIES BY OBJECTS OF EXPENDITURES — BUDGET FORM 3

JUSTIFICATION: TEXT—EXHIBITS — BUDGET FORM 2

SUMMARY OF PROPOSAL AND JUSTIFICATION — BUDGET FORM 1

BUDGET UNIT	PREPARED BY	AMOUNT BUDGETED

Cost Center		Expenditure History				Justification of Increase			
No.	Description	Prior Yr.	Prior Yr.	Current Yr.	(Proposed) Next Yr.	Net Increase (Decrease)	To Continue Program	To Expand Program	To Add Program (Delete)
	TOTALS								

10. SINGLE FUND ACCOUNTING

The agency's management has a primary task, which is to plan and conduct the substantive work of the state education agency. Management has an additional task, which is to obtain and to derive maximum benefit from the financial resources that make the conduct of the work possible. Much of this latter task rests upon the effective use of accounting and financial reporting.

Financial aspects of management are not inherently mysterious. Every effort should be made to prevent them from becoming unnecessarily obscure. The concept of "single fund accounting" holds great promise as one means of keeping financial matters clear, straightforward, and relatively uncluttered. The application of the single fund accounting concept is advanced as a major ingredient in the proposed management systems complex, because it can contribute greatly to the ease and clarity with which program-oriented information may be obtained.

Funds

Technically, a "fund" is a separate fiscal entity, the full record of which is maintained in a separate, self-contained, and complete set of self-balancing accounts. Each fund requires its own revenue, expenditure, and other accounts. Funds may be established for legal-technical reasons or for reasons of administrative convenience.

The financial condition of each fund is a matter independent of the financial condition of all other funds. The results of financial operations of one fund are independent of the results of operation of all other funds. In many respects, the clarity of an agency's fiscal data and fiscal statements is greatly enhanced by the fact that each fund is thus segregated.

On the other hand, a state education agency is a single enterprise with a single integrated, multi-faceted program of operations. To the extent that operations are reflected in separate sets of accounts that pertain to separate funds, there exists the danger that the clarity of the agency's financial records will be greatly diminished and that the availability of program-oriented information will be greatly decreased.

More explicitly, it is helpful to the clarity of financial records to segregate funds for current operations from funds for capital acquisition, debt service, or self-supporting and self-contained warehouses, printshops,

garages, and other auxiliary activities. Clarity is diminished, however, to the extent that ordinary current operations are reflected in the separate accounts of various funds.

With respect to its current operations, an agency develops a single budget. The budget encompasses the agency's plan of operations: the expenditures that are contemplated; the revenues that are expected to support the plan of expenditures. It is advantageous to record the entire budget within the fiscal record of a single operating fund. When it cannot be so—for reasons of law, contractual limits, or regulation—it is nevertheless advantageous to maintain the fiscal record of the operating budget *as though it were financed by a single fund.*

The single fund accounting concept can be applied under either set of conditions, i.e., either by literally incorporating the entire budget within one fund or by simulating a single fund.

The Accounting Problem

There is nothing inherently occult about accounting. Dollars enter the ken of the agency's management. Dollars are committed to use. Dollars are spent. A record must be kept of the dollars that are expected to enter and of those that materialize. A record must be kept of the dollars that are assigned for use and of those that are disbursed.

Money made available to the agency must be accounted for as revenues, in a set of revenue accounts. Money disbursed on behalf of the agency must be accounted for as expenditures, in a set of expenditure accounts. The revenue accounts are oriented primarily to the sources from which funds become available. The primary orientation of the expenditure accounts, however, is to the organizational and programatic matters for which money is committed and spent.

It would be incongruous to describe expenditures primarily in terms of the sources from which money is received. It also would be incongruous to describe revenues primarily in terms of the things that money buys. A dollar is a dollar: it comes into the orbit of the agency's control, and a record must be kept of whence and when it came; it is spent on behalf of the agency, and a record must be kept of when, why, and to whom it went.

In some cases, the problem is somewhat complicated, because money received from one source is earmarked at the source for support only of specified expenditures. A record must be kept of such specifications, and a means must be provided for determining whether the earmarked amounts in fact were spent in support of the designated expenditure items.

Single fund accounting is a clear, simple, and straightforward means for maintaining the several records.

Proliferation of Funds

As noted above, there are respects in which it is positively helpful to the clarity of fiscal records if more than one fund is recognized within the financial structure of the enterprise. The further proliferation of funds, however, increases the complexity of the financial structure; reduces the clarity of fiscal records and reports; decreases the utility of accounting, budgeting, and related fiscal systems; and tends to multiply the volume of accounting work. Proliferation of funds therefore should be avoided.

For the support of current operations, a state education agency receives money from a considerable number of different sources. Many revenue items are "earmarked," i.e., applicable only to support of specified types of work and perhaps applicable to support only of specified objects of expenditure. Frequently, each revenue item is accounted for in a discrete fund. When this is done, proliferation occurs and, with proliferation, a host of complications arise.

Accounting for current operations is the large-volume segment of work for financial offices. If money for current operations is dispersed among many funds, a multiplicity of funds multiplies the volume of precisely those transactions that can cause the greatest inconvenience.

Where multiple funding occurs—i.e., where several "pots" of money support a single line of work—the proper posting of every expenditure transaction document may create problems. Each transaction may have to be charged against various funds. The prorating or distribution of individual expenditures is a source of difficulty and irritation; it requires the decision to be made, for each expenditure, that one bit of the transaction shall be charged against *this* "pot" and another bit of the same transaction against *that* one. A ninety-seven cent purchase may cause more accounting entries than are required—where multiple funding is not allowed to have this effect—to record major transactions; for example, if the total payment must be distributed on a 50-30-20 percentage basis, even the odd pennies create problems.

The effect of such procedures is not limited to an increase in the volume of work, annoying though that may be. Its more profound effect is to distort matters so greatly that expenditures—which should be viewed primarily in terms of the program components for which they are incurred—come to be examined basically in terms of the revenue items to which they

are related. When matters are distorted in this manner, program-oriented expenditure accounting tends both to become extremely difficult and to receive only residual attention.

The Single Fund Concept

It requires no technical knowledge of accounting to observe that financial management and fiscal records would be greatly simplified and clarified if (a) all expenditures for current operations could be paid from a single fund, (b) all transactions affecting a single component of program could be entered in just one sector of the budgetary accounts, and (c) the distribution of charges—to various accounts, to various funds, to various "pots"—could be made subsequently, in lump-sum and summary form.

For example, if a single fund were charged initially for all payments, the total liability of all other funds could be computed at the end of each fiscal period: a month, a quarter, or even a year. In restitution, each fund could be charged for lump-sum payment of its proper share of the total.

The expenditure "side" of the budget ought to be recorded in the financial records in a pattern that (a) accurately expresses the agency's plan of operations and of expenditures and (b) minimizes the complexity, awkwardness, and volume of transaction entries, in favor of simplicity and clarity.

These objectives can be gained if the expenditure plan is accounted for within a single fund; they can be gained if the plan is accounted for *as though it were within a single fund*, even if, technically, it is not. (It is relevant to note that, in general, accounts maintained *by* a state education agency are "formal" records only to a limited extent. From the viewpoint of central financial authorities of the state government, the agency's records may be considered to be "mere memorandum accounts." It is quite conceivable that an agency might utilize the single fund approach to accounting even though its state's more formal records are differently maintained.)

The identity, amount, limitations, conditions, matching requirements, or other restrictions surrounding each revenue item cannot be ignored or forgotten. Such restrictions are binding. They must be honored. They must be reflected in financial reports.

Nevertheless, the single fund concept of accounting can be so utilized as to satisfy both the requirements of administrative convenience and clarity, and those of legal or other restrictions. In essence, the process consists of two segments: (1) record the expenditure plan and the record of its execu-

tion in one fund and (2) establish an explicit and unambiguous linkage between each element of the expenditure plan and the source(s) of revenue available for its support. Financial reporting subsequently must specify the precise extent to which expenditures are attributed to their corresponding revenue sources.

The pattern in which both responsibility- and program-oriented budgetary accounting should be maintained was described previously. That basic accounting task is best performed on the single fund accounting basis. The following discussion deals with the companion problem: to link the revenue and expenditure sides of the budget, via a series of "funding plans."

11. FUNDING PLANS

A state education agency derives financial support from several sources: the state government; the national government; private foundations; other institutions or individuals. A single source may provide any number of different revenue items. Some revenue items are made available to the agency for its unrestricted use in the conduct of its several general lines of activity. Other revenue items are made available to the agency subject to one or more stipulated conditions or restrictions or limitations.

Several types of stipulations are common: the money may be used during one period of time but not during any other; the money may be used for one line of work but not another; the money may support one "object of expenditure" (e.g., salaries, travel, supplies, or equipment) but not another; the money may be utilized if and only if the agency supplements it with more money derived from another source (i.e., the "matching" arrangement); use of the money may be conditioned upon the agency's performance of specified acts (just as a school may receive a gift on condition that the donor's name be prominently displayed); the money may be available on the endowment basis, the principal to be invested and the earned interest to be available for expenditure; use of the money may be limited by any combination of these or other stipulations.

Concept of the Funding Plan

A "funding plan" is an explicit statement of the revenue and expenditure aspects of one segment of the agency's budget. A funding plan deals with one "line of work." In effect, it is a subbudget. It identifies the program components—i.e., the cost centers—that comprise the indicated line of work. It further identifies the revenue item or items that are to be util-

ized in support of that line of work, and includes complete specifications regarding the limitations, restrictions, matching requirements, etc., that govern the use of the revenues. The agency may need to establish several funding plans; the number required will be determined by the agency's fiscal structure: the number of revenue sources and the complexity of the conditions governing the use of money derived from each source.

The concept of the "funding plan" is advanced as a device which, when incorporated into the proposed systems complex available to agency management, can retain the necessarily explicit and unambiguous trail that links expenditure items to their related revenue items within an agency's budget. The use of funding plans is a necessary adjunct to the use of single fund accounting. The need for the use of funding plans stems from two factors: the existence of varying conditions imposed upon the utilization of money received from some sources of revenue; and the overlapping that exists among revenue items that are destined to support specified types of expenditures.

The Problem of "Overlap"

A single cost center, or one closely related set of cost centers, often derives its financial support from a relatively complex set of sources of money. The state's legislature, the national Congress, private foundations, and other sources of financial support may provide money simultaneously for identical or broadly overlapping components of the agency's total program of work

The expenditure record of each cost center should be completely maintained within the expenditure account established to represent that cost center. Prior to adoption of a budget, during execution of the budget, and following completion of the budgetary fiscal period, however, it remains essential that the agency's management simultaneously maintain a record of the relationship between those expenditures and the sources of revenue that are deemed to support them.

A funding plan contains the information necessary to establish that relationship firmly and with clarity: (a) the type of operations included, identified as comprising specified cost centers; (b) the revenue items that are included, identified as to source and conditions; and (c) the dollar amounts that are included, identified as to source, object, cost center, etc., and including both estimated and actual amounts.

The account that represents a cost center is labelled to indicate the particular funding plan in which the sources and conditions of funding for the cost center are enumerated.

A Related Misconception

It is often—and mistakenly—believed that an incoming dollar must be followed entirely through the financial records, up to the point of its final disposition and disbursement, as though that dollar were a truly unique and identifiable entity. Efforts to label and follow each dollar are misguided. They lead only to absurdly complicated, cumbersome, tedious, and misleading financial records. Such records, in fact, are demonstrably artificial; they do not correspond with reality, are not especially informative, do not provide extra protection to the integrity of use of each dollar, and—in short—they are not necessary.

A connection obviously exists between receipts and expenditures. The agency plans its operations on the basis of the anticipated availability of financial support from various sources, taking into account the sometimes severe restrictions placed on the use of such support. The agency then receives and spends money, in accordance with its plan of operation as expressed in the budget and recorded in budgetary accounts.

In some cases, a dollar is spent before it physically is received. In most cases, the agency *per se* does not physically receive the dollar, deposit the dollar, retain custody of the dollar, or disburse the dollar A state revenue agency receives and deposits the money; the state treasury retains custody of the money; and one or more other departments of state government participate in disposing of the money. In virtually no case, therefore, is it feasible for an agency to follow each individual revenue item step by step through the process to disbursement. Accounting records that purport to do so are necessarily fictional. Such records also are awkward. For several reasons, they ought not be maintained.

"Attribution" of Financial Relationships

The relationship between a revenue dollar and an expenditure dollar is *attributed*, not direct or literal. In virtually no case is it literally accurate to state that a particular piece of coin, currency, or negotiable paper has been traced through the entire path from entry into the agency to the point of exit from the agency. The relationship between the revenue dollar and the expenditure dollar is figurative rather than literal.

The point is most sharply underscored by cases in which an expenditure is made, recorded, and paid for *prior* to receipt of the revenue item that supports the expenditure. In such cases, obviously, the expenditure dollar was not literally the revenue dollar; the relationship is nonetheless real.

Every dollar of expenditure can be labelled, when necessary, to indicate the revenue source from which it is *deemed* to have been derived. Every

dollar of revenue can be labelled, when necessary, to indicate the manner in which it is *deemed* to have been expended: "deemed to have been" expended or derived, because no other relationship can conveniently be established and because no other relationship need be established. Revenues and expenditures are *construed* to be related.

For management, the problem is this: to provide a mechanism whereby the attributed relationships between revenue and expenditure items, respectively, can be made explicit and unambiguous. Management need not isolate revenue items in separate "pots" and need not pay its bills by disbursing incremental amounts from each one. When a revenue item carries restrictions as to its use, management must record the receipt and note the restriction; when expenditures are made for the purpose permitted by the restricted item, management may "deem" or "construe" those expenditures to be related to the revenue item, and management may "attribute" the expenditure as a charge against the restricted funds.

Illustration One

To illustrate the matter, consider this example.

From a restricted-use source of revenue, the agency received a $40,000 grant, to be used only in support of the program item labelled "Evaluation Project Seven." The costs of that Project—i.e., for that cost center—are accounted for within a program-oriented expenditure account. To the cost center "Evaluation Project Seven," the agency allocated the sum of $95,000: $40,000 supplied as indicated, plus $55,000 to be drawn from other (non-restricted) sources The budget is executed. At the close of the fiscal period, it is established that actual expenditures charged against the cost center amounted to $94,600.

The grantor of the restricted-use revenue item requests a report, to cover disposition of the $40,000. The agency reports $40,000 spent as specified, in support of the designated project. The agency can substantiate its report with documentary evidence.

A report on the project *per se* shows an expenditure total of $94,600. A report to the grantor may show the same total; alternatively, it may be limited to the $40,000. If necessary, an itemized list of transactions may be prepared, enumerating the expenditures charged. If necessary, a selected list can be prepared that will total precisely $40,000. The full project cost can be documented to the satisfaction of audit requirements; the partial cost also can be so documented.

It is of scant interest whether the currency received for "Evaluation Project Seven" was disbursed to pay for the expenditures of that project.

The relevant and controlling fact is that the earmarked amount was spent in support of the project. Using items that comprise the $94,600 expenditure total, many "$40,000 assortments" of transactions can be constructed. Depending upon the terms of the grant, the laws of the state, and the convenience of the agency, the most advantageous of such assortments can be "deemed" or "construed" to have been "paid by" the $40,000 grant.

Illustration Two: Junior's Birthday Fund

Junior anticipates receipt of a windfall, because two events virtually coincide in time: his birthday and his graduation from the eighth grade. When asked, Junior lets it be known that he aspires to a set of golfing equipment, hence that gifts in currency would be preferable to those in kind.

After the events, Junior establishes his accounting records and proceeds to prepare and execute his budget. He prepares to issue his reports on the use of revenues received. A series of reports will be required, each report in the form of a bread-and-butter note addressed to one funding source. The task is difficult, because quite different amounts were received from each of the sources and because several sources imposed awkward restrictions on the use of the funds.

Junior finds that three statements are necessary, before reports can be issued.

Junior was fortunate, because the budget of expenditures fit reasonably well into the few limitations imposed by his well-wishers. All dollar gifts received were deposited into his bank account, where each bit of currency of course lost its individual identity. All purchases were made by check, and Junior eventually will accumulate a full set of cancelled checks and "paid in full" bills from the "pro" shop and other stores.

If an auditor were to review Junior's records, he would find that (a) the resources had been received, deposited, expended, and accounted for in a manner that satisfies the requirements of legality, propriety, and integrity, as well as customary accounting standards, and (b) restricted funds were utilized in accordance with the limitations placed on their use by each funding source. Funding plans are intended to help state education agencies to do as well.

Funding Plans and Funding Formulas

An agency must establish several funding plans. Every cost center must be assigned to one plan. The sum of all funding plans combined must represent the total budget of the agency. In simple cases, a funding plan may

1. GIFTS RECEIVED (Not counting bank balance $105.31)

From	Restriction	Amount
Mom & Dad	Golf stiff	$ 50—
Cousin Kirk	None	10—
Uncle Karl	None	10—
Uncle Merlin	"Have a ball"	25—
Granddad	"Whatever you need"	100—
Aunt Myra	"For warm socks"	5—
Aunt Yvonne	"To enjoy"	5—
Cousin Maria	"For a warm sweater"	15—
TOTAL		$220—

2. RECORD OF PURCHASES

CASH:
$105.31
+220.—
$325.31
−256.40
$ 68.91

Golf set, including bag, clubs, and cart (package deal, "pro" shop)	$175 95
Golf balls	6—
Golf shoes & sweat socks	26 95
Golf jacket & sweat shirt	22 50
Instruction series "A" & use of practice tee	25—
TOTAL	$256 40

3. THANK YOU TO ____ FOR ____

Mom & Dad — the golf cart
Granddad — the bag & woods
Cousin Maria — the jacket and sweatshirt
Cousin Kirk and Uncle Karl — irons and putter
Aunt Myra — socks
Uncle Merlin — lessons etc.
Aunt Yvonne — 3 doz. golf balls
Others: John, for the book. Stevie, monopoly set. Blanca, gloves. Karen, book. Annette, ties. Mary, book. Sarah, book. Stuart, toy. Aunt Hazel, shirts.

reflect the distribution among cost centers of the proceeds of a single revenue item. In more complex cases, a funding plan may reflect the distribution of several overlapping revenue items, as well as the expenditures of various cost centers.

A funding plan identifies the several revenue items that are involved, the restrictions governing the use of each, and the proportion that each item bears to the total. The funding plan further identifies the cost centers, expenditures of which are to be attributed to the revenue items enumerated. The funding plan can be extended to spell out the most advantageous pattern of attribution. If the full amounts planned actually are expended, the attributions may follow one pattern. If total expenditures are less than anticipated, a different pattern may be more advantageous.

Each funding plan may be recorded in the accounting records. If accounts are maintained with the help of computers, each funding formula may be recorded also, so that, at the end of each fiscal period, reports may be produced indicating expenditures incurred and the attribution of expenditure amounts to revenue sources. With or without the assistance of computers, the information necessary can be produced and arrayed as suggested in the chart that follows.

Chart VI. FUNDING PLAN FORMAT

FUNDING PLAN NO.	FISCAL PERIOD: FROM—TO	PROGRAM SECTOR INCLUDED

REVENUE SOURCES, AMOUNTS AND RESTRICTIONS-LIMITATIONS						PROGRAM-ORIENTED ALLOCATIONS AND EXPENDITURES				
SOURCE: Specify Law, Title, Award No., Etc.		Object Of Expenditure	Amounts: Per Object and in Total	"Matching" Requirements	Mini.-Max.	Cost Center	Cost Center Acct. Number	Object	Amounts: Allocations	Amounts Expended
No.	Description									

CHART VI. FUNDING PLAN FORMAT

Example 1. Advance Planning Worksheet

Work sheet only

PRELIM — 2/15/68 RH

FUNDING PLAN NO.	FISCAL PERIOD: FROM--TO	PROGRAM SECTOR INCLUDED
12	7/1/68 - 6/30/69	IMPROVING SCHOOL DISTRICT MANAGEMENT

REVENUE SOURCES, AMOUNTS & RESTRICTIONS-LIMITATIONS						PROGRAM-ORIENTED ALLOCATIONS & EXPENDITURES				
SOURCE: SPECIFY LAW, TITLE, AWARD NO., ETC. NO.	DESCRIPTION	OBJECT OF EXPENDITURE	AMOUNTS: PER OBJECT & IN TOTAL	"MATCHING" REQUIREMENTS	MINI-MAX	COST CENTERS	COST CENTER ACCT. NUMBER	OBJECT	AMOUNTS: ALLOCATIONS	AMOUNTS EXPENDED
01	Genl. Apportionment	—	—	AS NEEDED	—	Budget & acctg.	123		96,700-	
19	ESEA 1965 XII Award #16-19-172	01	39,400-	465M - 245 ± 220		Transportation Aid	124		20,000-	
		04	3000-			Revenue Clinics	128		42,300-	
		10-11	— 0 —			Info. Systems	131		306,011-	
		03	1600-						465,000-	
		09	2000							
			51,000-	24.000-	75,000-					
26	NDEA 1967 XIII Award #B37-912-12	ALL	94.000-	6,000-	100,000-					
84	KETTERING GRANT 2/14/67 -- COST CENTER #131 ONLY	01	40,000-							
		02 } 08 }	60,000-							
			100,000-	—	100,000-					
	TOTALS	01	79,400-							
		03	1 600-							
		04	3 000-							
		09	2 000-							
		02 & 08	60 000-							
		MISC.	94 000							
			245,000-	30.000-	275,000-					

During the period prior to adoption of an annual budget, this format can serve as a worksheet useful in determining which sources would be most sensibly attributed to which cost centers.

JA-Note: May be better to use ESEA award on plan #8. The Board seems reluctant to invest state $$ there, & this plan could work without tapping that grant.

CHART VI. FUNDING PLAN FORMAT

Example 2. Preliminary Reporting Worksheet

Preliminary 7/5/68 BER

FUNDING PLAN NO.	FISCAL PERIOD: FROM -- TO	PROGRAM SECTOR INCLUDED
12	7/1/68 - 6/30/69	Improving School District Management

REVENUE SOURCES, AMOUNTS & RESTRICTIONS-LIMITATIONS						PROGRAM-ORIENTED ALLOCATIONS & EXPENDITURES				
SOURCE: SPECIFY LAW, TITLE, AWARD NO., ETC. NO.	DESCRIPTION	OBJECT OF EXPEN-DITURE	AMOUNTS: OBJECT & IN TOTAL	"MATCHING" REQUIRE-MENTS	MINI-MAX	COST CENTERS	COST CENTER ACCT. NUMBER	OBJECT	AMOUNTS: ALLOCATIONS	AMOUNTS EXPENDED
26	NDEA '67 XIX B57-4/12-12	—	94,000	6,000	100,000		123	01 02 04 08	N.A. +21 7/10	
								Total	85,000	84701.65
84	Kettering 8/14/67 C.C. #131 only	01 02 & 08	40,000. 60,000.	—			124	01 04		19 000 1 000
	Total restricted:		194000	6,000				Total	20,000.	20,000.
01	Genl Appro.	—	196000	OK	OK		128	01 04		30,001.30 4,948.70
	Total		390,000					Total	35,000.	34,950.00
							131	01 02 04 08		67,308.82 159,041.00 13,541.50 10,010.00
								Total	250,000	249800.32
								F. T.	390,000	385,451.97

Following the close of a fiscal period, this format can serve as a worksheet useful in determining the most advantageous formula by which finally to relate expenditures and revenues.

Notes to Report Unit:

Pete: charge the full $40M & $60 M to #84; the rest of #131 to Genl.

charge all of #123 to NDEA XIX

" the balancing amt to NDEA XIX. from #124

The remainder of #124, all of #128 -- plus the rest of #131 -- to Genl.

BER 7/5/68

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5j

12. EMPLOYMENT OF SYSTEM: ADOPTION, ADAPTATION, INSTALLATION

Two *Appendices* accompany this report. They are at quite different levels of abstraction. One consists of a statement of the context in which a system treating of program-oriented information must be considered; in effect, the discussion offers a rationale for the present study. The other Appendix sets forth a series of codes, proposed for use in connection with the proposed "dimensions" and uniform "categories" that are central ingredients in the systems complex herein recommended.

Together, the two supplements suggest the two quite different sets of considerations involved in employment of the systems complex: first, the question of adoption of the system, dealing with the academic problems of its utility and convenience; second, questions of the detail work that must precede system operation.

In the opinion of the Project Staff engaged in this study, an agency must be prepared to invest a period of at least six months in the process of moving *from* adoption *through* the intervening steps *to* effective operation of the recommended systems complex.

These steps are required for full implementation, after the decision to adopt has been taken:

1. Detailed design of forms, cards, step-by-step procedures, computer programs (or other machine arrangements), reports and report formats, clerical instructions, etc.
2. Decisions regarding the choice of cost centers, i.e., decisions as to the specific aspects of the agency's total program of work that will be treated as discrete items for which costs will be separately accumulated.
3. Decisions regarding specific problems of classification and coding.
4. Conversion of data—already recorded under existing systems—into the form, format, and language(s) of the new system.
5. Design of exhaustive sets of test cases, and performance of complete test runs of procedures and programs.
6. Purchase and receipt of required forms, cards, etc.
7. Under regular operating conditions, full operating tests of the system during one or more months.

In some states, it may be necessary to add review clearance, or approval on the part of central staff agencies of state government.

The identification of cost centers—item 2 above—is the basic and critical task involved in adaptation of the proposed systems complex for use in each state's education agency. *Adoption* raises a fundamental policy problem for management; *installation* raises various technical problems for management; *adaptation*—and here the designation of cost centers is the critical item—raises problems of values and judgments.

As defined earlier, a cost center represents a segment of the agency's program: a project, subproject, or other program component. Each agency—similarities among agencies notwithstanding—has a unique program that is packaged, so to speak, in unique fashion. Each agency therefore will have a unique set of cost centers.

A tentative enumeration of cost centers has been developed for prospective use within the prototype system being created for the Maryland State Department of Education. The results of this first essay into designation of cost centers are presented in the Appendix, to illustrate how an agency's total program may be divided into cost centers and how cost centers may be coded for information system use. The preliminary list of possible cost centers contains code numbers that indicate the categories identifying the cost centers with respect to several basic dimensions. (The list is presented for illustrative purposes only: it is not yet recommended for adoption even by the Maryland Department, and the cost centers tentatively enumerated are unlikely to describe accurately the total program of any other state education agency.)

Predictable Difficulties of Adaptation and Installation

Employment of the proposed systems complex requires several changes in frame of mind, as well as changes in procedures, codes, and the like. In order to produce and utilize data that are "program-oriented," the agency, its staff, its accountants, its auditors, and its patrons will find it necessary to discard old mental habits in favor of new ones.

Program-oriented budgeting requires that attention be addressed to the substantive aspects of agency operations. Program-oriented accounting requires that costs be related to substantive aspects of agency operations. Program-oriented reporting requires that statements shall enumerate agency operations in substantive terms and shall relate costs to substantive aspects of program.

These matters represent a considerable departure from many existing sets both of systems and of attitudes. A certain amount of resistance to change clearly is predictable.

In the expenditure records, for example, program-oriented practice will tend to de-emphasize the identification of position designations or of

individual staff members. Various members of the agency's staff may participate in the conduct of a specified component of program. The extent to which each staff member does participate must be reported and recorded; the appropriate share of each one's salary must be charged against the program-oriented cost center account that represents the program component. The account very literally is used to *accumulate* a total of the costs involved in performance of that program component.

The work is planned in advance. It is management's task to make certain that the requisite staff resources are available. It is an administrative and supervisory task to make certain that the available resources are utilized as planned and that each program component is properly performed. It is a task of program-oriented accounting and reporting to keep management and program administrators informed of the extent to which the pace of actual expenditures conforms to the prior plans and to budgetary allocations of resources. Staff members are employed by the agency and assigned to work in organizational units that are responsible for the conduct of various program components.

At the close of a fiscal period, it is necessary to relate expenditures to their sources of funding. Several questions become pertinent: for the cost centers related to a single funding plan, what amounts were expended? in total? by object of expenditure? to which sources of funds shall they be attributed, and in what proportions?

In contrast, standard practices—not program-oriented—tend to focus attention very pointedly on the names of the staff members whose salaries shall be paid, in whole or in part, from specified revenue sources. Standard practice thus tends to express expenditure matters in the terms of revenue sources and to tie staff members to the revenue items that are supposed to support their salaries, in specified proportions.

Usual practice in the awarding of legislative appropriations and of grants, for example, is not program-oriented. Such practice tends to focus attention on the salaries corresponding to specific positions occupied by specific individuals; specified percentages of designated positions' and individuals' salaries are provided for in the appropriation or grant, terms of which may make similarly specific provisions for other objects of expenditure.

Such practice has several disadvantageous effects. Staff members to some extent are virtually invited to perceive themselves as employees of a grant rather than of the agency. Expenditures tend to be thought of in terms of the items allowable under a grant rather than in terms of require-

ments of substantive program considerations. To some extent, the grantor may even be encouraged to think of the staff members involved less as employees of the agency than as employees of the grant.

The purpose of an appropriation or a grant, however, is to support a specified line of work conducted by the agency. The motivation that leads to the award clearly is program-oriented. Program-oriented budgeting, accounting, and reporting therefore should be eagerly welcomed by appropriating and granting bodies, as well as by the agency's own management (including its board) and staff.

The logic of the matter notwithstanding, established habits may be extremely difficult to change. Budget analysts accustomed to line-item budgetary practice may be exceedingly reluctant to have such practice supplanted or supplemented by program-oriented practice. Auditors accustomed to established procedures may be exceedingly reluctant to devise new audit procedures that are suited to program-oriented budgetary and accounting practice. Officials accustomed to utilizing separate bank accounts as substitutes for effective accounting may be exceedingly reluctant to surrender the control over operations that their control over treasury practice has hitherto provided.

Within the agency, as well as outside the agency, resistance to change may be tenacious. Staff members may consider that the periodic reporting of their own activities is an imposition and is unprofessional as well; if program-oriented systems are to operate, however, staff members whose time is spent on several lines of work will have to report the amounts or proportions of time actually devoted to each program component during each pay period. Agency accountants, account clerks, payroll processors, etc., may be reluctant to accept new methods of work. Staff members who rather like being considered as employees of specified grants, rather than of the agency, will be predictably reluctant to lose what they may perceive to be privileged status.

There is no assurance, furthermore, that funding agencies will prove to be any more enlightened in these respects than are staff members, accountants, auditors, budget analysts, and the rest. Such agencies very well may be adamant in their insistence that the awards of money shall be related very directly to specific positions, salaries or persons, and to specific items of equipment, services, or commodities.

Predictable Aids to Adaptation and Installation

The foregoing discussion is not intended as an enumeration of obstacles that *will* make adaptation and installation difficult but rather as a warning that such obstacles may arise.

On the other hand, several factors will be working in favor of any state education agency that chooses to adopt the proposed program-oriented systems complex. Without pretending to place them in sequence, some of these factors are noted.

Single fund accounting *per se* is a clear, straightforward, and eminently attractive accounting concept. It permits day-by-day financial operations to be greatly facilitated. It permits budgetary statements to be greatly simplified. Those who prepare or utilize financial statements should become enthusiasts for the proposed changes.

Budget agencies at all levels of government currently endeavor to adopt some form of program budgeting. Within the Federal government, the planning/programming/budgeting effort is in full swing. Those state education agencies that choose to adopt the proposed program-oriented systems complex will probably find that their efforts are applauded both by the state's budgeting authorities and by Federal and private funding agencies. In fact, such state education agencies will find themselves well ahead of most branches of state government in the move toward program budgeting.

Conclusion

In any case, whether or not the aids to adaptation and installation outweigh the obstacles, the logic of the situation is overwhelmingly in favor of adoption of program-oriented management systems. The agency exists in order to accomplish the goals of substantive program matters; its budget, accounts, and reports ought logically to be oriented primarily to substantive matters.

Organizational arrangements, funding arrangements, established auditing practices, *et al.* are of secondary importance. Even if the need to reflect those matters in records, accounts, and reports were a major impediment to program-oriented systems, they should not be allowed to hinder adoption of program-oriented systems. In fact, they are not intrinsically an impediment to program-oriented processes.

Program-oriented information can be obtained with ease if program-oriented budgeting, accounting, and related processes are adopted. Each state education agency needs such information. The information cannot be obtained conveniently unless it can be drawn from regular budgetary and accounting records. In order for a state education agency to be able to satisfy the requirements of its own management, program-oriented systems such as those proposed in this report should be adopted, adapted, and installed.

Appendix A

SINGLE- AND MULTI-DIMENSIONAL INFORMATION: CODES FOR DIMENSIONS, CATEGORIES, AND COST CENTERS

The work of a state education agency is varied and complex. It can be examined from many different perspectives. Each perspective opens an entirely legitimate line of inquiry. Each line of inquiry permits a unique examination or reexamination of the agency's impact upon students and upon learning. Unfortunately, it is not yet known which line of inquiry will prove to be most revealing, informative, and helpful. Therefore, the state education agency's information system must be built with the capability to describe and analyze the agency and its work from several different vantage points. The system's regular, standardized, data-based reports may be oriented to only one or two perspectives, of course, but the system's capabilities must be broader.

No matter which viewpoints are used, the object of study is the work of the state education agency and its relationship to "students" and to "learning." Students can be grouped into a variety of population clusters; similarly, problems of teaching and learning can be variously grouped, depending upon one's purpose in studying them. An agency must record sufficient data so that it may array its populations, problems, and purposive programs in as many configurations as the several "perspectives" require. With respect to the agency's own operations, its program-oriented information system must record sufficient data so that its "programs" may be expressed in a format and language that satisfy the requirements of each perspective.

What are these "perspectives"? An examination of agency program can be geared to emphasize the agency's client groupings; that is one perspective, and it highlights one dimension of the agency's program of work. The work is multidimensional, however; in addition to several clienteles, segments of the work are addressed to several instructional levels, several purposes, several subject matters, etc.; thus the work can be examined on the basis of one dimension at a time or on several dimensions simultaneously.

One may slice into the agency's work from one point of view after another. Each slice will reveal a different cross section of the work. Each

cross section will highlight a separate dimension. When measured or arrayed in terms of its orientation to any one dimension, the work will be describable in terms of a separate set of categories. For example, if instructional level is the dimension highlighted, the relevant categories are clusters of grades; if clientele is the dimension, the categories are groupings of student populations. The units of measure in all cases will be indications of effort, i.e., man-hours or dollars or other resources invested by the agency in attention to each instructional level, each clientele, or each of the other categories recognized.

Regardless of the viewpoint from which it is examined, obviously, "the work of the state education agency" is a finite quantity; the total work is the total work, no matter how many times it may be sliced, examined, and reexamined. The work costs a specified sum of money which acquires a finite total of property or of human effort. Any cross-sectional view of the work will reveal the same total, but the total will be differently segmented.

A one-dimensional description of the work will have utility and will be informative. However, the agency's work is not one-dimensional. Hence a one-way view of the work will not indicate how work is assembled into viable projects and other components of program. A project or other program component deals simultaneously with a clientele, a purpose, a subject matter, an instructional level, etc.; it therefore can be described or measured in terms of several dimensions, and it can be located meaningfully within one category on each dimension. Thus each cost center, because it represents a multidimensional bit of work, is subject to multiple categorization.

The agency's management information system must provide for both single- and multidimensional approaches to the description, quantification, and analysis of the agency's total work. To illustrate: a single-dimensional report might specify the amount of work that is addressed to one identifiable population cluster within the agency's clientele; on the other hand, a multidimensional view would further indicate which portions of the work addressed to that clientele are conducted at each instructional level, in attention to each subject matter, and in pursuit of each stipulated educational purpose.

For particular tasks of description and analysis, both single- and multidimensional views of agency program are useful and informative. Every cost center represents one *ad hoc* and multidimensional component of program: a bit of the program that attends simultaneously to a specified combination of clientele, purpose, instructional level, function, etc. If each such component of program can be described adequately, in terms of the

various dimensions, then the total program also can be satisfactorily described by grouping and consolidating the data that pertain to all cost centers.

"Dimensions" and "Categories"

Instructional level, population served, subject-matter emphasis—these are three quite different points of departure for inquiring into the work of a state education agency. The agency's total work can be sliced into from any of these angles; each slice will expose a different cross-sectional view. It is perfectly clear that each cross section may offer a reasonable, valid, and useful picture of a state education agency and its work. At present there is no reason to believe that any one view will be more useful than all others, and there is less reason to expect that only one view ever could satisfy all legitimate inquiries.

In these discussions, each "cross section" is identified in terms of the special viewpoint that produces it. The term DIMENSION is employed to mean "key factor in this cross-sectional view"; thus a "dimension" is the basis for a report. The term CATEGORY is employed to mean "measuring point along this dimension"; thus, the "category" is a line-item or set of line-items by which measurement is made along any single "dimension." For example: on the dimension "Instructional Level," the categories are clusters of grade levels of schooling, e.g., schools for infants, schools for children, etc.; on the dimension "Characteristics of Target Clientele," the categories are identifiable groups of people, e.g., "regular" students, students requiring special services, etc.

A basic step in system design is to choose the dimensions to be recognized. Several dimensions are described in the discussions below. A next step in the design of a system is to choose the categories to be recognized within each dimension. The Charts included in this Appendix offer enumerations of proposed categories.

In all cases in which interstate comparisons are desired, the categories recognized in all agencies' information systems will have to be compatible: compatible rather than identical, because some agencies may choose to subdivide categories and to obtain data at a further level of detail than the proposed classification scheme would provide; all agencies should, if feasible, produce data at the level of detail indicated by the categories listed. In cases where comparability is not feasible or not needed—e.g., funding plans—each agency would devise its own "categories" and its own organizational coding pattern.

A Hazard: Excessive Categorization

While choosing dimensions and defining categories, it will be well to act with caution in order not to categorize and sub-subclassify to harmful as well as unnecessary extremes. Because every job and program component of the state education agency is multidimensional, it is subject to classification on the basis of each dimension to be recognized. On some of the bases for description, a given program will fit only in the "not applicable" category; but every program is subject to categorization on all dimensions.

Lists of dimensions and categories do not comprise or define a chart of accounts. However, the data classification structure *will* determine the complexity of the account structure, coding practices, etc. Excessive detail in the classification system would create an immense burden. The greater the number of "pigeon holes" in the dimension-and-category coding system, the greater the number of accounts that will be required.

Imagine, for a moment, that there are ten dimensions in the system for slicing the agency's work into bits of information. Imagine further that ten categories are established within each dimension. There would be 100 categories in all. Imagine them laid out on a grid, 10 dimensions across, 10 categories down. In theory, the coding system would yield many millions of different combinations of categories into which a given multidimension piece of work might fit, and the chart of cost center accounts could provide an account for each combination.

However, an agency need not identify or set up an account for every combination. No agency conducts that many different program components; there is no point in opening accounts for nonexistent combinations of categories. Besides, some combinations of categories can be constructed on the grid but cannot exist in reality. For example, "schools for infants" never pursue "work-oriented" purposes; it would be nonsensical to open an account (or a memory unit in the computer) to record something that assuredly *cannot* exist, and it would be a waste of effort to provide for recording what *does* not exist.

The number of employees in the agency provides one clue for arriving at the number of useful combinations of categories of information that an agency might need or wish to collect: there is not much chance that the agency will have appreciably more program components than it has personnel. The reverse is more likely: some staff members may be engaged in more than one program component each, but in any reasonably large agency each identifiable program component often will engage the efforts of more than one person.

The way to decide finally how many pigeonholes shall be built, therefore, seems to be this: to analyze the work of the agency, to decide how

many discrete bits of work shall be individually labelled, recorded, and counted, and to establish each such "bit" as a cost center.

Obviously, there is virtually no end to the degree of detail that could be provided for; the work can be sliced into an infinite number of infinitely small bits. The agency needs to apply a rule of reason, and to slice no finer than necessary.

With respect to this point, agency officials will find it helpful to remind themselves—as they prepare to slice—that the agency is only one small part of the educational system of their state. The fundamental object under study is the total educational system. There is no point in being super-analytical with respect to the agency, if the same degree of detail cannot or will not be obtained regarding the remainder of the educational system.

It pays to remember that the agency's expenditures consume a small part of the total educational costs of a state. In Maryland, for example, the annual cost of operating the State education agency has been only a few million dollars, whereas the total expenditure on the educational system has been well above the half-billion level. The BEDS, VEIS, and related studies* will result in information being gathered about the bulk of the educational system; that information will reach a modest level of detail. The program-oriented information system that describes the state education agency's work will gather further information about what is inherently a very tiny piece of the educational system. There is little reason to slice the tiny piece any finer than the remainder. After all, if one were to prepare a financial report on a state's educational system, the total cost of the state education agency would be merely one undifferentiated (and not especially significant) portion of "general administration" or of overhead.

Thus, the number of categories to be recognized within any dimension should be rather limited. More categories mean smaller bits of data, more accounts, and more and longer reports. More categories also mean more difficulty in obtaining data, in deciding on where to categorize bits of data, and finally in interpreting data. Except for a rule of reason, there is no rule available for deciding how many categories there should be or how narrow; it is rather like the old saw about a woman's skirt: it should be long enough to cover the subject, short enough to be interesting.

One additional reminder may be useful: it is the state education agency's work that is to be categorized, not the targets of its work. For example, if the task were to count pupils or courses by grade level, we might have to provide a pigeonhole for each semester of each year then add still more categories to accommodate all the varieties of ungraded and multi-

* The reference is to ongoing, multiagency, collaborative efforts to design "basic educational data" and "vocational education information" systems.

graded groupings. But the substantive work of a state education agency need not be so narrowly categorized: once we note that a unit of work is aimed at one or another broad cluster of grades, there is no need for more detail regarding the instructional level. Similarly, if we were to study actual enrollment by course, we might need to recognize thousands of separate courses, differentiating them by subject, grade, semester, etc.; but to assess the extent to which the agency's efforts are directed to various subject-matter areas, it suffices to recognize a few broad clusters of academic disciplines, skills, etc. In short, it is both desirable and feasible to establish few categories rather than many.

Proposed Dimensions, Categories, and Codes

Several dimensions should be used in uniform fashion by all state education agencies. Proposed dimensions, categories, and code numbers are presented below. The dimensions for which uniform use is recommended are the following:

1. The United States Office of Education code of "program functions."
2. Function: major functions and minor or subfunctions.
3. Clientele.
4. Purpose.
5. Subject matter.
6. Instructional level.

Any number of additional dimensions may be employed by each state education agency, and such additional dimensions may be supplemented, supplanted, or modified from time to time, as deemed convenient by each agency. The use of three types of additional dimensions is discussed below; the three are the following:

7. Longevity of cost center.
8. Funding plan.
9. "Program" dimensions.

Function.—The state education agency undertakes to achieve its varied goals by means of efforts invested in a few basic types of work. These have often been referred to as "function," and that usage is relied upon here. (In Handbook IV—on staff accounting—of the USOE series, "service area" is used in lieu of "function," and "area of responsibility" in place of "subfunction.") It is a function of the agency to study education in its state, for example. It is a function of the agency to provide technical assistance to other educational units within the state. It is a function of the agency to dispense material and financial support to other educational units.

The number of functions is a matter of definition, of course. One study* distinguishes three classes of functions: regulatory, operational, and leadership functions. In that format, the "leadership" functions include planning, research, advising or consulting, coordinating, and public relations; the "operational" functions include the provision of services to individuals, the conduct of schools or classes, and the management of cultural and educational institutions or programs of service; and the "regulatory" functions are accreditation, certification, and licensing.

The Chief State School Officers devised a somewhat different set of "functions," which has been incorporated into USOE forms related initially to Title V of the E.S.E.A. In the CSSO format, the functions (somewhat abbreviated here) are: general administration of the agency; research and development; provision of material and financial support to other units; provision of technical assistance on instructional matters; provision of technical assistance on administrative matters; and operation of facilities, schools, programs, and services. When this format is set in the context of an accounting system or a reporting system regarding agency expenditures, other "nonfunction" categories are required to complete the financial picture: the costs of general overhead and employee benefits, and the value of material and financial support dispensed to other educational agencies.

This study essentially accepts the CSSO format. The data generated by a satisfactory information system, however, also should be susceptible to regrouping into alternative "functional" classifications.

Two points deserve further discussion. First, any classification of an agency's work into ten or a dozen "functions" is relatively arbitrary and produces very broad groupings; such classification formats therefore yield readily to further subclassification and refinement whenever needed. Second, a given "function" may be performed by the agency for each of several goals or purposes, in attention to many different problems, for the sake of many different clienteles, motives, tasks, tec. Analysis by function, therefore, is independent of analyses by other dimensions.

Analysis by function is useful and informative. Each state education agency's information system, accordingly, must be built with the capacity to respond to inquiries oriented to a classification by function or subfunction.

The following pages contain two closely-related versions of the dimension "function": first, the USOE code of "State Education Agency Program Functions"; and, second, a more narrowly one-dimensional code of major functions and subfunctions.

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* Citation given in note (1), Chart A-2, below.

Chart A-1

STATE EDUCATION AGENCY PROGRAM FUNCTIONS

PROGRAM FUNCTION	
Code No.	Category
100.000	GENERAL ADMINISTRATION
101.000	*State Education Agency Board(s), Commission(s), Committee(s)*
101.100	Office of State Board of Education *(if staffed by other than Office of CSSO)*
101.200	Office of Executive Officer(s) *(other than CSSO)* responsible directly to SBE
101.300	Office of State Board for Vocational Education *(if staffed separately from SBE or office of CSSO)*
101.400	Office of Executive Officer(s) *(other than CSSO)* responsible directly to SBVE
101.500	Office of State Education Agency subsidiary or advisory Board(s), Commission(s), Committee(s) other than the SBE or SBVE
101.600	Offices of Executive Officer(s) *(other than the CSSO)* responsible to State education agency subsidiary or advisory board(s), commission(s), and committee(s) other than the SBE or SBVE
111.000	*Office of Chief State School Officer*
111.100	Office of Chief State School Officer *(CSSO)*
111.200	Office of Deputy or Assistant(s) to CSSO *(When not chargeable to other program functions)*
111.300	Office of Coordinator of State-Federal Programs
111.400	Coordination of special programs concerning human rights
111.900	Other *(Specify)*
131.000	*Departmental Internal Administration*
131.100	General Direction and Management of Departmental Internal Administration Functions
131.200	Program Management
131.300	Personnel Management
131.400	Budget
131.500	*Business Management (Payroll, Purchasing, Supply Accounting, Internal Audit, Mail Controls, et cetera)*

PROGRAM FUNCTION	
Code No.	Category
131.600	Other *(Specify)*
141.000	*Departmental Internal Supporting Services (Exclude Research)*
141.100	General Direction and Management of Departmental Internal Supporting Services Functions
141.200	Legal and Legislative
141.300	Library—Professional
141.400	Statistics and Data Processing
141.500	Graphic Arts, Publications, and Editorial Services
141.600	Information Services
141.900	Other Departmental Internal Supporting Services *(Specify)*
191.000	*Developing State Education Agency Staff Competencies*
191.100	General Direction and Management of Programs for Developing the Competencies of State Education Agency Staff
191.200	Preservice Orientation and Training
191.300	Sabbatical Leave
191.400	Inservice Fellowships, Traineeships, Internships, et cetera
191.500	Institutes, Workshops, Conferences, Special Courses
191.600	Other *(Specify)*
199.000	*Other General Administration*
200.000	DEPARTMENTAL SUPPORTING SERVICES FOR LOCAL EDUCATION AGENCIES
201.000	*General Direction and Management of Departmental Supporting Services for Local Education Agencies*
211.000	*Educational Aid Distribution*
211.100	For State Supported Programs
211.200	For the Federal Programs and/or Programs with Federal Participation
211.300	Other Educational Aid Distribution Programs *(Specify)*
221.000	*Textbooks, Instructional Materials, and Equipment Distribution and Services*

STATE EDUCATION AGENCY PROGRAM FUNCTIONS—(Cont.)

PROGRAM FUNCTION	
Code No.	Category
231.000	*Surplus Property Distribution*
241.000	*Surplus Commodities Distribution*
251.000	*Statistical and Data Processing Services*
299.000	*Other Departmental Supporting Services for Local Education Agencies (previously coded 261.000) (Specify)*
300.000	STUDY, PLANNING, DEVELOPING, AND EVALUATING STATE EDUCATIONAL PROGRAMS
301.000	*General Direction of Study, Planning, Developing, and Evaluating State Education Programs*
311.000	*Study, Planning, and Evaluating State Educational Programs on a Comprehensive Basis*
321.000	*Study, Planning, Developing, and Evaluating Specific Aspects (Other than Curriculum) of Education in the State*
321.100	Study, Planning, and Evaluating State Education Agency Programs
321.200	Legal and Organizational Structure of Education
321.300	Administration and Management of Education
321.400	Financing Education
321.500	School Plant Facilities
321.600	Measuring Achievement of Pupils
321.700	Staffing of Educational Programs
321.800	Other *(Specify)*
331.000	*Curriculum Research and Development, including Study, Planning, Demonstration, Innovation, and Evaluation*
331.100	General Direction of Curriculum Research and Development Function
331.200	Centers for Research, Demonstration, and Innovation
331.300	Vocational-Technical Education Research Programs
331.400	Dissemination of Information on Curriculum Research and Development
331.500	Other *(Specify)*

PROGRAM FUNCTION	
Code No.	Category
341.000	*Collecting, Interpreting, and Disseminating Information on the Condition, Needs, Progress, and Improvement of Education*
399.000	*Other Study, Planning, Development, and Evaluation for Improvement of State Educational Programs (Specify) (previously coded 391,000)*
400.000	LEADERSHIP, CONSULTATIVE, AND TECHNICAL SERVICES TO LOCAL EDUCATION AGENCIES FOR IMPROVEMENT OF INSTRUCTION
401.000	*General Direction and Management of Leadership, Consultative, and Technical Assistance to Local Education Agencies for Improvement of Instruction*
401.100	For Combined Vocational and Non-Vocational Programs
401.200	For-Non-Vocational Programs
401.300	For Vocational Programs
405.000	*Generalized Leadership, Consultative, and Technical Services for the Improvement of Instruction—by Program or Level*
405.100	Pre-Kindergarten Education
405.200	Kindergarten Education
405.300	Elementary Education, grades .....
405.400	Secondary Education, grades .....
405.500	Combination Elementary and Secondary, grades .....
405.600	Adult Education
405.700	Technical Institutes
405.800	Area Vocational/Technical Schools
405.900	Junior *(Community)* Colleges
405.910	Senior Colleges and Universities
405.990	Other *(previously coded 405.100) (Specify)*
411.000	*Leadership Consultative and Technical Assistance in Subject Areas and Instructional Services*
411.005	*Arts and Humanities (Combination)*
411.010	Art, grades .....
411.020	Music, grades .....

STATE EDUCATION AGENCY PROGRAM FUNCTIONS—(Cont.)

PROGRAM FUNCTION	
Code No.	Category
411.030	English Language Arts, Including: Speech, Dramatic Arts, and Forensics. Exclude: reading specialization. Grades .....
411.040	Reading, grades .....
411.050	Foreign Languages, grades .....
411.060	Social Sciences/Social Studies, grades .....
411.061	Economics *(previously part of code 411.060)* grades .....
411.062	Civics *(previously part of code 411.060)* grades .....
411.063	Geography *(previously part of Code 411.060)* grades .....
411.064	History *(previously part of code 411.060)* grades .....
411.065	Other *(previously part of code 411.060)* grades .....
411.070	Mathematics, grades .....
411.080	Natural Sciences, grades .....
411.090	Health and Safety Education, Driver Education, Physical Education, and Recreation, grades .....
411.100	Industrial Arts, grades .....
411.110	Agriculture, grades .....
411.120	Home Economics, grades .....
411.130	Manpower Training
411.140	Business Education, Non-Vocational
411.150	Office Occupations
411.160	Trade and Industrial Education
411.170	Health Occupations
411.180	Distribution and Marketing
411.190	Technical Education
411.200	Socially or Economically Disadvantaged *(previously coded 411.303)*
411.210	Basic Literacy Education *(previously coded 411.304)*
411.300	Special Education
411.310	General Direction of Leadership, Consultative, and Technical Assistance in Special Education *(previously coded 411.301)*
411.320	Mentally Retarded *(previously part of code 411.302)*
411.330	Speech Handicapped *(previously part of code 411.302)*
411.335	Hearing Handicapped

PROGRAM FUNCTION	
Code No.	Category
411.340	Deaf *(previously part of code 411.302)*
411.350	Visually Handicapped *(previously part of code 411.302)*
411.360	Emotionally Disturbed *(previously part of code 411.302)*
411.370	Crippled *(previously part of code 411.302)*
411.375	Other Health Impaired
411.380	Gifted and Talented *(previously coded 411.305)*
411.390	Other Special Education *(Specify)* *(previously coded 411.306)*
411.400	School Library Services, grades .....
411.410	Audiovisual Services, grades .....
411.420	Textbook and Other Instructional Materials, grades .....
411.990	Other Specialized Instructional Subject or Service Area *(Specify)*
431.000	*Pupil Personnel Services*
431.100	Pupil Accounting and Attendance, and Visiting Teachers and Social Work Services
431.200	Pupil Guidance and Counseling Services
431.300	Pupil Health Services
431.400	Pupil Psychological Services
431.500	Other *(Specify)*
491.000	*Leadership and Consultative Assistance in Developing the Competencies of Professional Staffs of Local Education Agencies*
491.100	Preservice Orientation and Training
491.200	Sabbatical Leave Programs
491.300	Fellowships, Traineeships, Internships
491.400	Institutes, Workshops, Conferences, Special Courses
491.500	Other *(Specify)*
499.000	*Other Leadership Consultative and Technical Services to Local Education Agencies for Improvement of Instruction (Specify)*
500.000	LEADERSHIP, CONSULTATIVE, AND TECHNICAL SERVICES TO LOCAL EDUCATION AGENCIES FOR THE IMPROVEMENT OF ADMINISTRATIVE ASPECTS OF EDUCATION

STATE EDUCATION AGENCY PROGRAM FUNCTIONS—(Cont.)

PROGRAM FUNCTION	
Code No.	Category
501.000	*General Direction of Leadership, Consultative, and Technical Assistance Services to Local Education Agencies for Improvement of Administrative Aspects of Education*
511.000	*Specialized Aspects of the Organization, Administration, and Operation of Local Education Agencies*
511.100	District and School Organization and Administration
511.200	School Plant Facilities
511.300	Pupil Transportation
511.400	School Lunch
511.500	Statistical Service, Including Data Processing
511.600	Financial and Business Management
511.700	Other *(Specify)*
591.000	*Leadership and Consultative Assistance in Developing the Competencies of District-Wide Administrative and Technical Services Staff*
591.100	Preservice Orientation and Training
591.200	Sabbatical Leave
591.300	Fellowships, Traineeships, Internships
591.500	Other *(Specify)*
599.000	*Other Leadership, Consultative, and Technical Services to Local Education Agencies for the Improvement of Administrative Aspects of Education (Specify)*
600.000	STATE DEPARTMENT OPERATED FACILITIES, SCHOOLS, PROGRAMS, AND SERVICES
601.000	*School Accreditation, Licensing, and Chartering*
601.100	Elementary and Secondary Schools
601.200	Postsecondary *(Excluding Colleges and Universities granting a baccalaureate or higher degree)*
601.300	Colleges and Universities
601.900	Other *(Specify)*
611.000	*Improving Teacher Education Programs*
611.100	Institutional Programs
611.200	Student Teaching Programs
611.300	Other *(Specify)*
621.000	*Certification and Licensing*
621.100	Of School Personnel
621.200	Of Nonschool Personnel
631.000	*Special Schools*
636.000	*Colleges and Universities*
641.000	*Educational Television*
651.000	*Vocational Rehabilitation*
661.000	*Special Cultural Programs and Services*
661.100	State Library
661.200	Public Library and Library Extension Services
661.300	Museums
661.400	Music, Art, and Dramatic Arts
661.500	Other Special Cultural Programs *(Specify)*
671.000	*Pupil Scholarship and Assistance Programs*
671.100	Scholarships and Other Honor Programs
671.200	Work-Study Programs
681.000	*Civil Defense Education*
691.000	*Direct Assistance to Individual Staff Members of Local Education Agencies and Schools for Preservice and Inservice Development*
691.100	Preservice Orientation and Training
691.200	Sabbatical Leave
691.300	Fellowships, Traineeships, Internships, et cetera
691.400	Other *(Specify)*
699.000	*Other State Department Operated Facilities, Schools, Programs, and Services (Specify)*
700.000	GENERAL *(UNALLOCATED)* FUNCTIONS *(Specify)*
800.000	EMPLOYEE BENEFITS *(WHEN NOT ALLOCATED AMONG THE FUNCTIONS)*
900.000	OTHER STATE EDUCATIONAL AGENCY PROGRAM FUNCTIONS *(Specify)*

Chart A-2

Dimension: MAJOR FUNCTION (1)

CATEGORIES	Observations/Definitions/Comments
100 **General Administration** 200 **Providing Material or Financial Support and/or Service (3)** (Observe that major functions 200,400, and 500 are closely related: each represents state education agency efforts that are intended to aid the programs of other educational units.) 300 **Study, Planning, Developing, and Evaluating Educational Phenomena** 400 **Providing Technical Assistance re Instructional Matters** 500 **Providing Technical Assistance re Administrative Matters** 600 **Operating Facilities, Schools, Programs, and Services** * * * (Observe that the following categories are, in a sense, "nonfunction" items: the first represents portions of the "cost of doing business"; the other is a measure of one segment of the agency's "volume of business.") 700 **General Unallocated Expense (2)** 800 **Value of Money and Material Distributed to Other Units (3)**	(1) Note that the eight major categories enumerated correspond to the major categories of "program function" per USOE forms OE 5164-C *et al.* They are believed to be virtually all-encompassing; accordingly, no "Other" category is listed, but an agency of course can open and add a category to accommodate work not otherwise provided for. Note also that these eight major categories—and subcategories to be defined—accommodate the categories identified in Fred F. Beach, *The Functions of State Departments of Education* (Federal Security Agency, Office of Education, 1950). (2) Such overhead items as power, heat, space, etc., may be *unallocated* in many accounting systems, i.e., not charged to specific organizational units, functions, programs, etc. Note that the variations in practice with respect to this matter *could* make interstate comparisons of data extremely difficult; fortunately, most items involved can be screened out for purposes of comparison, on the basis of "object of expenditure" classification. (3) Some expenditures made or authorized by a state education agency are not a part of the costs of operating the agency; rather, they reflect the value of money and material that is distributed *via* the agency *to* other units. The expense of the distribution process is an agency expense. Hence, two separate categories of function: numbers 200 and 800.

Chart A-3

Dimension: MAJOR AND MINOR FUNCTIONS

	CATEGORIES
100	**General Administration**
110	Boards of Education
120	Executive Office of Chief State School Officer and immediate staff
130	Departmental Internal Administration
140	Departmental Internal Supporting Services
190	Other
200	**Providing Material or Financial Support and/or Service**
201	Administration
210	Distribution: Financial Aid
220	Distribution and Services: Textbooks, Instructional Materials, and Equipment
230	Distribution: Property
240	Distribution Commodities
250	Statistical and Data Processing Services
290	Other Supporting Services
300	**Study, Planning, Developing, and Evaluating Educational Phenomena**
301	Administration
310	Comprehensive: General Surveys and Studies
320	Specific Aspects: Other than Curriculum
330	Specific Aspects: Curriculum Research and Development
340	Information on the Condition, Needs, Progress, and Improvement of Education: Collecting, Interpreting, and Disseminating
390	Other
400	**Providing Technical Assistance Re Instructional Matters**
401	Administration
410	Generalized Services
	Special Services:
420	Curriculum
430	Methodology
440	Tests and Testing
450	Learning Resources
451	Library
452	Instructional Materials Development
453	Audiovisual
454	ETV
460	Pupil Personnel
490	Other

Chart A-3—(Continued)

	CATEGORIES
500	**Providing Technical Assistance Re Administrative Matters**
501	Administration
510	Generalized Services
	Special Services:
520	Personnel Administration
530	Finance and Business Administration
540	Transportation
550	Health and Welfare
560	Food Services
570	Data Processing
580	Facilities Planning
581	Plant Management
590	Other
600	**Operating Facilities, Schools, Programs, and Services**
601	School Accreditation, Licensing, and Chartering
610	Improving Teacher Education Programs
620	Certification and Licensing
630	Educational Operations:
631	Schools
636	Colleges and Universities
639	Other
640	Educational Television
650	Vocational Rehabilitation
660	Special Cultural Programs and Services
670	Pupil Scholarship and Assistance Programs
680	Developing Staff Competencies within Agencies Served: Direct Assistance to Individuals
690	Other
700	**General Unallocated Expense**
750	Employee Benefits
800	**Value of Money and Material Distributed to Other Units**

Clientele.—Educational activities serve various categories of people who, for one reason or another, can be viewed as separate groups. Each group may require separate attention. To view people in these groupings opens a line of inquiry that may ignore such factors as instructional level in order to ask: what part of the agency's attention is devoted to children

who are extraordinary in one respect or another? or, what part is devoted to a population confronted by one or another special problem? Each agency's information system must contain the capacity to respond to inquiries about the agency's attention to such identifiable clienteles within the population.

Chart A-4

Dimension: CHARACTERISTICS OF TARGET CLIENTELE

CATEGORIES	Observations/Definitions/Comments
10 Typical "Student" Populations	
11 "Regular" students only	
18 "Exceptional" students	
19 All	
20 Social - Ethnic - Economic Populations (1)	(1) Refers to populations not in the typical pupil groups.
21 Immigrants	
22 Migrant workers (2)	(2) Also includes families of migrant workers.
23 Disadvantaged	
24 Unemployed	
25 Undereducated youth and adults	
28 Other	
29 All	
30 Educators	
31 Prospective (3)	(3) E.g., teachers in training.
32 Classroom teachers in service	
33 Administrative and supervisory	
34 Specialists and technicians	
35 School boards	
39 All	
40 Nonschool Publics	
41 General public	
42 Commercial/Industrial/Labor groups	
43 Civic/Service groups	
49 All	
50 Miscellaneous Categories	
51 All	
52 Unpredictable combinations	
53 None	
54 Not applicable	

Purpose.—"Purpose Pursued by Educational Effort" is another valid and meaningful dimension on which to array data regarding the agency's work. As used in these discussions, "purpose" does not refer to the over-

Chart A-5

Dimension: PURPOSE PURSUED BY EDUCATIONAL EFFORT

CATEGORIES	Observations/Definitions/Comments
10 General Schooling (1)	(1) Refers to general educational programs, for typical students at all grade levels, aimed at producing a civilized, literature, "educated" society of "good men, good citizens" and aimed also at preserving the culture
20 Work-oriented Schooling or Training	
21 All	
22 "Technical"	
23 "Occupational" (2)	(2) Usually secondary level or non-collegiate post secondary.
24 "Professional" (3)	
30 Work-oriented Re-schooling or Retraining	(3) Usually higher education.
31 All	
32 Professional upgrading, refreshers, etc.	
33 Occupational retraining	
40 Education for Adaptation, Adjustment, or Assimilation	(4) Refers to educational programs for (among others): assimilation of immigrants; adaptation to urban living; adjustment calculated to overcome social or *cultural disadvantage; etc.*
41 All	
42 Physical rehabilitation	
43 Basic, literacy, or fundamental (4)	
44 Other	
50 Education for Leisure, Recreation, or "Personal and Cultural Improvement" (5)	(5) Refers largely to casual, typically "noncredit," spare-time, after-hours varieties of educational programs of the kinds often available at community-oriented schools, colleges, or centers; refers also to organized, often competitive adjuncts to general schooling.
51 All	
52 Personal care (6)	(6) E.g., physical education, health, etc.
53 Sports, athletics	
54 Hobbies, arts and crafts	
55 "Culture"	
56 Family relations	
57 Civil defense	
59 Other	
60 Miscellaneous Categories	
61 All	
62 Unpredictable combinations	
63 None	
64 Not applicable	

riding goals, purposes, or objectives of the state education agency. It refers rather to the questions: for what reason do people go to school? or, for what reason does the educational system offer specified opportunities for schooling?

One "purpose" (in this sense of reason or motive) leads educators and students into job-oriented market-place-oriented educational activity. For another part of education effort, the primary purpose (in this sense of reason or motive) is the cultivation of civilized citizens. For yet another portion of the total educational enterprise, the primary purpose is the rehabilitation of persons who, in another age, would merely have been discarded, or the assimilation into society of persons who might otherwise remain on its fringes (e.g., for ignorance of the English language, for unfamiliarity with urban living, for inability to read and write, etc.). It is inevitable and reasonable that questions will be raised regarding the extent to which the agency's attention is invested in support of each of these purposes. It therefore is necessary that the agency's information system be built to supply responses to such questions.

Subject Matter.—Similarly, educational programs impart instruction in various subjects, i.e., academic disciplines, skills, arts, crafts, etc. This creates another separate line of inquiry: what part of the agency's atten-

Chart A-6

Dimension: SUBJECT MATTER

CATEGORIES	Observations/Definitions/Comments
"Academic" Discipline Areas	
10 Humanities (1)	(1) Includes art, music, language, literature, etc.
20 Mathematics and sciences (2)	(2) Includes physical, chemical, and biological sciences.
30 Social sciences	
"Nonacademic" Subjects	
40 Involving skills (3)	(3) Includes typing, automobile driving, etc.
50 Involving crafts (4)	(4) Includes automotive repairs, etc.
60 Involving special subjects (5)	(5) Includes subjects applied to a particular phase of life, e.g. to agriculture, domestic sciences, or industry.
70 Involving personal care (6)	(6) Includes physical education, etc.
Miscellaneous Categories	
91 All	
92 Other	
93 Not applicable	

tion is devoted to each subject or category of subjects? Each agency's information system must be equipped to yield responses to such inquiries.

Instructional Level.—The basic, large-scale task of an educational system is the education of children and adolescents, in preschool, elementary school, and secondary school programs. The most obvious line of inquiry regarding a state education agency's work, therefore, emphasizes the agency's attention to each of the principal instructional levels: what part of the agency's attention is invested at the preschool level, the elementary-grade level, the secondary-grade level, the postsecondary level, respectively? Each agency's information system, clearly, must be capable of responding accurately to such questions.

Chart A-7

Dimension: INSTRUCTIONAL LEVEL (1)

CATEGORIES	Observations/Definitions/Comments
10 **Pre-elementary Education (2-a)** 20 **Elementary Education (2-b)** 30 **Secondary Education (2-c)** **Postsecondary Education (3)** 40 Collegiate postsecondary: 41 Junior or community college 42 Other college or university 50 Noncollegiate postsecondary (4) 60 All postsecondary education 80 **Combinations of Instructional Levels** 81 Prekindergarten through elementary 82 Prekindergarten through secondary 83 Elementary plus secondary 84 Elementary through postsecondary 85 Secondary plus postsecondary 86 All levels **Miscellaneous Categories** 99 "None" or not applicable	(1) Note that this is not a device for classifying pupils in the schools. It is a device for categorizing the efforts of agency personnel: are their efforts aimed at one broad level of instruction rather than another? Categories therefore are rather broad, and specific grade levels are ignored, on the assumption that a component of the agency's program is unlikely to be limited, say, to the grade 5 level only. (2) The first three categories distinguish *two* separate characteristics, in fact; age groupings and conventional grade-level groupings, as follows: a. Pre-elementary = infants, e.g., usual ages below 6. b. Elementary = children, e.g., usual ages 6-13. c. Secondary = adolescents, e.g., usual upper age limit 19. (3) Postsecondary categories similarly accommodate an age distinction as well as an indication of level: these categories refer to post-high-school youth and to adults. (4) Includes "adult education" of the basic, literacy, etc., categories.

Longevity of Cost Center.—It is advantageous for management to be able to differentiate cost centers in terms of the probability of their continuing existence. A cost center that represents the agency's "front office," for example, is expected to remain on the books indefinitely and must be included in budget projections into the future. On the other hand, a cost center that represents a "one-shot," short-term project can be deleted from such projections because its early demise is readily predictable. The life expectancy of each cost center can be estimated with reasonable accuracy.

The estimates of "longevity" can be reduced to a few uniform categories within a dimension. The proper categorization can be added to the record of each cost center. When required, reports can be generated which indicate the extent of the future commitments that already are built into the agency's current program of work.

Reports on this basis are useful to the agency, but not necessarily for purposes of exchanging information with others. Each agency can elect whether to use this dimension and, if it is to be recorded, can devise categories that are suitable to local circumstances.

Example:

Code	*Category*
1.	Cost centers scheduled for termination this year.
2.	Cost centers scheduled for probable continuation into next year, but subject to review.
3.	Permanent.

Funding Plan.—In effect, each "funding plan" is a subbudget utilized to establish the connections that link together (a) a specified segment of the expenditure plan and (b) the revenue item(s) that are deemed to support that segment. When several cost centers are involved and when several overlapping revenue items also are involved, a funding plan may be quite a complex statement; under other circumstances, a funding plan may simply record the fact that one specified revenue item is linked to one specified cost center.

Each cost center is linked to one funding plan, whether the plan is complex or simple. Each funding plan is assigned an identifying number. Assignment to funding plan becomes an added basis for the classification and grouping of cost centers: the dimension may be termed "assignment to funding plan," and the identifying numbers of the several funding plans may be regarded as categories.

"Program" Dimensions.—The word "program" has so many meanings that its use becomes somewhat dangerous. In any given context, the word's meaning is likely to be clear enough: in virtually all usage, "program" refers to some substantive portion of operations. However, the phrase "a program" is a most ambiguous expression, unless a limited and explicit meaning is assigned to it arbitrarily.

Each cost center is a component of the state education agency's total "program." At one level of abstraction, in fact, each cost center may be referred to as "a program."

However, an agency may record hundreds of cost centers in its accounts. It is awkward to suggest that the agency conducts hundreds of programs. Appearing before a legislative committee, for example, the chief state school officer scarcely would choose to begin to enumerate all cost centers, one by one.

At various times and for various reasons, it is extremely useful to combine cost centers into clusters and to regard each cluster as "a program." When cost centers are thus grouped—in terms of any rational basis—it is perfectly reasonable to term each cluster "a program."

In this sense, every dimension is the basis for enumeration of one version of state education agency programs, and every category in effect becomes the title of one program. Thus, when cost centers are arrayed on the basis of their categorization by level of instruction, the resulting clusters of data represent "the elementary program," "the secondary education program," and so forth. When they are arrayed on the basis of their categorizations by subject-matter emphasis, the resulting clusters represent another version of "the agency's programs."

Thus utilized, "programs" are not mutually exclusive, of course; they represent various manners of perceiving and describing the same total of work. For example, some portion of "the elementary education program" is simultaneously a part of "the science and math program."

A state education agency may choose to devise further versions of "program" arrays. For example, when he appears before the state's budget bureau, governor and cabinet, or state legislature's appropriations committees, the chief state school officer may find it advantageous to depict the agency's operations as being comprised of a half-dozen major, dramatically-labelled, high-impact "programs." Each such program might encompass, in fact, dozens of cost centers.

When the chief state school officer discusses such matters with the board of education, on the other hand, it may prove advantageous to identify more "programs." The board, after all, is likely to be more knowledgeable about the work of the agency than is the legislative committee, and the board is likely to *expect* more detailed data than a legislative committee is willing even to *tolerate*. Therefore, for purposes of the board's review, it may be desirable to depict the agency's operations as being comprised of some larger number of "programs," more than the legislature's half-dozen but still fewer than the total number of cost centers.

The state government may undertake to place its entire budget on a "program basis." The state budget may be divided into a limited number of "programs," each of which represents a wide swath of total governmental operations. Most segments of the state education agency's work may fit into one such program; others, however, may be relatively dispersed. For example, one government-wide program may be "education," and the bulk of the state education agency's work may fit therein; but another government-wide program may be "regulation and licensing," and substantial segments of the agency's operations may have to be so classified.

These few examples suggest a series of "program dimensions": (1) a very compact set of programs, suitable for presentation to the legislature; (2) a somewhat larger set of programs, suitable for presentation to the board of education; and (3) the set of programs chosen by the state's budgeting authorities for expression of government-wide operations. Just as each cost center is categorized to indicate its placement as perceived from the point of view of the other dimensions, each cost center may be categorized in terms of its placement within each version of "program," if such versions are in fact adopted.

The number of "program dimensions" is not an important matter, for the addition of a new dimension is unlikely to increase the volume of work or the difficulty of systems operations. When a new dimension is recognized, each cost center must be categorized, and the code number that corresponds to the category must be recorded in the master record of the cost center. When reports are to be prepared on the basis of any such dimension, cost centers can be grouped as needed, on the basis of the categorizations previously recorded, and group totals can be developed.

Organization.—The organizational pattern is the principal basis for the account structure utilized in responsibility-oriented processes. An agency's management information system therefore provides data arrayed on the organizational basis. Organizational units (i.e., divisions, bureaus, sections,

and branch offices or separately-managed institutions) execute the agency's program. Organization-oriented data are significant to agency management and to the central staff units of state government (i.e., to the budget, accounting, personnel, and similar agencies of the state).

Each expenditure charged to the account of a cost center is also charged to an organizational unit. Typically, but not invariably, a cost center will be related exclusively to a single unit, and all expenditures of the cost center will be charged to that parent unit.

"Organization" cannot quite be regarded as a dimension by which to classify cost centers *per se*. However, the expenditure transactions of a cost center can be arrayed by organizational unit, just as the transactions charged to an organizational unit can be classified by cost center.

Data arrayed by organization would not be informative to persons unacquainted with the agency, hence would not provide useful interstate exchanges or comparisons of information. To the extent that organization is a "dimension," therefore, it is one for which each state education agency will have to develop its own coding pattern. A code for prospective use by the Maryland State Department of Education is presented for illustrative purposes only.

Sample Enumeration of Cost Centers

On the basis of preliminary study, the total program of the Maryland State Department of Education has been very tentatively divided into a set of cost centers. Each cost center thus provisionally identified has been categorized in terms of several recommended dimensions and categories. The preliminary list and tentatively-assigned codes are presented only for purposes of illustration; the accounts finally established by the Maryland Department may vary substantially from the list shown here.

Identification of Cost Centers.—The selection of cost centers is the single most critical stage in the design of a system for installation within a particular agency. The essential purpose is to identify meaningful components of the agency's substantive program of operations: programs, projects, subprograms, "task forces," special teams, *et al.* The process is complicated by two factors:

1. The categories to be recognized within each dimension—if their boundaries are to be scrupulously observed—may require that a single, well-integrated project (or other program component) must be subdivided for purposes of accounting and reporting.

Chart A-8

ORGANIZATION

CATEGORIES	
	("Categories" enumerated here do not purport to be applicable in agencies other than the Maryland State Department of Education. "Categories" are the existing organizational units; each state agency, of course, will need to follow its own organizational pattern.)
Agency "legislative" body: 01 State Board of Education	Includes the Board and all Board staff adjuncts.
Chief executive office: 02 Office of the State Superintendent of Schools	Includes the Superintendent, his Deputy, and their immediate staff of administrative and clerical assistants.
03 Division of Research and Development 04 Division of Administration and Finance 05 Division of Federal-State Programs 06 Division of Instruction 07 Division of Vocational Education 08 Division of Library Extension 09 Division of Vocational Rehabilitation 10 Division of Certification and Accreditation	Note that subunits—if and where established as identifiable segments of the organizational structure of the agency—can and should be recognized.

This is not to suggest that such projects *shall* be subdivided for these purposes but merely to point out that the possibility will arise. Consideration of the possibility is unavoidable. If subdivision would require extremely awkward reporting arrangements, however, or if the advantages of increased information capability are outweighed by the disadvantages of increased complexity, the subdivision of a program component into two or more cost centers can be avoided.

For example, if the distinction between the elementary and secondary levels of instruction is to be observed, a K-12 study project may have to be divided—for reporting and accounting purposes only, not for project administration—into two cost centers, one to capture costs related to the elementary level portion of the study, the other to capture costs related to the secondary level part of the study.

There can be no hard-and-fast rule on this matter: if the distinction would be too great a nuisance, it can be avoided; if the distinction is believed to be important with respect to a given project, the project can be recorded in two or more cost centers.

2. The fact that a "bit" of program is separately funded may require that it be isolated within a separate cost center, even though—in any substantive sense of "program"—it may not be the sort of truly discrete program component that an agency would choose to record and report separately. This is awkward but unavoidable.

(This factor is not introduced because the cost center approach is adopted. It stems rather from the special accounting and reporting requirements that are created whenever the practice of "categorical" financial support is applied in excessively narrow fashion.)

The selection of cost centers thus requires application simultaneously of several separate criteria: (1) agency management's judgment regarding the program components worthy of identification; (2) the relatively formal requirements imposed by such restrictive funding arrangements as may be in effect; and (3) the distinctions suggested by the structure of the dimension and category coding system.

In Maryland, the Project Staff has utilized these steps in the process of developing the tentative list of cost centers:

1. A review of relevant documents: e.g., budgets, Departmental reports, descriptions of programs.
2. Interviews with program administrators of the Department, partly to obtain further information and partly to begin to obtain expressions of judgment regarding program components that should be separately treated in accounts and reports.
3. Development of tentative outlines of program components within each Division of the Department.
4. Interviews with other members of the professional staff of the Department: partly to secure additional expressions of judgment; partly now to begin to "test" the tentative outlines.

5. Development of the preliminary list of cost centers, together with the first essay at the assigning of code designations.

6. Review and modification of the preliminary list, prior to submission of the list to agency management for the first steps of formal consideration.

The next steps toward refinement and adoption of a usable list of cost centers will conform to the Department's standard internal practices.

Related Information: Staff and Staff Performance

Accounts that represent the cost centers will provide for quantitative expressions of the state education agency's effort invested in each component of program. A report on the basis of any dimension will be one expression of the pattern in which the total effort is distributed among the several categories of the work, i.e., among the several "programs" that comprise the agency's total effort. A "program," in this sense, is a construct: a program consists of a cost center or group of cost centers that are perceived to be "alike" in terms of any rational basis for classifying them.

The investments of effort are most readily expressed in financial terms: the number of dollars and cents invested, i.e., the amounts expended for the employment of personnel and for the purchase of commodities, equipment, property, and services.

The major object of expenditure is the employment of personnel. An agency employs staff members, and their salaries are determined. Each pay period, each employee's gross salary, assorted deductions, and net salary are entered on a payroll, and he is paid. The employee's time is chargeable in two ways: his salary must be charged to the appropriate organization- or responsibility-oriented account(s); it must be charged also to the appropriate program-oriented cost center accounts. (The same is true of all other expenditures; attention is focused upon salaries because they represent the only difficult or troublesome problem of expense distribution.)

The distribution of salary expenses should be based upon the best approximation of "reality" that is available, i.e., the best information available regarding the program components to which each staff member has addressed his or her efforts during the pay period. The best such information is available at the source: directly from each staff member. Specifically, this suggests that, at the close of each pay period, a staff member shall be asked to report the shares of his time and effort that he has spent on each of the cost centers dealt with by the organizational unit in which he works. The total expenditure represented by the employee's salary then

Chart A-9. CHART OF COST CENTER ACCOUNTS
(PRELIMINARY) FOR MARYLAND'S STATE AGENCY

Cost Centers		"Program" Functional USOE Code	Funding Plan	Longevity	Function	Clientele	Purpose	Subject Matter	Instructional Level	"Program"
No.	Name									
	(Division of Administration and Finance)									
001	Board of Education	101.000			110	54	61	91	86	
002	Executive Office of Superintendent	111.000			120	54	61	91	86	
003	Planning and Development Services	299.000			290	54	64	93	82	
004	Organization Study	131.100			130	54	64	93	99	
005	Project Information System	141.100			140	54	64	93	99	
006	Administration and Finance Divisional Administration	131.100			130	54	64	93	99	
007	Departmental Purchasing	131.500			130	54	64	93	99	
008	Personnel Administration	131.300			130	54	64	93	99	
009	Budgeting	131.400			130	54	64	93	99	
010	Publications and Editing	141.500			140	54	64	93	99	
011	Accounting	131.500			130	54	64	93	99	
012	Field Auditing	299.000			290	54	64	93	99	
013	School Lunch Program: Commodities	241.000			240	19	64	93	82	
014	School Lunch Program: Financial Aid	211.000			210	19	64	93	82	
015	State Aid Program	211.000			210	19	64	93	82	
016	Driver Education	211.000			210	19	59	40	30	
017	Pupil Transportation: Financial Aid	211.000			210	19	64	93	83	
018	Pupil Transportation: Regulation	299.000			290	54	64	93	99	
019	School Plant Planning	511.200			580	54	64	93	99	

Chart A-9—(Continued)

Cost Centers		Program Functions: USOE Code	Funding Plan	Longevity	Function	Clientele	Purpose	Subject Matter	Instructional Level	"Program"
No.	Name									
	(Division of Research and Development)									
020	Research and Development Divisional Administration	141.100			130	54	64	93	99	
021	Data Processing	141.400			140	54	64	93	99	
022	Technical Assistance: Statistics and Methods	141.400			140	54	64	93	99	
023	Development of ETV	641.000			640	19	10	91	84	
024	Basic Educational Data Bank	141.400			140	51	63	91	86	
025	Educational Aid Distribution	211.000			210	54	64	91	82	
026	EDP Services to Other Agencies	511.500			570	54	64	93	99	
	(Division of Federal-State Programs)									
027	Federal-State Programs Divisional Administration	111.300			130	19	62	91	86	
028	Federal-State Liaison	111.300			130	19	62	91	86	
029	Distribution of Financial Aid	211.200			210	19	62	91	86	
	(Division of Instruction)									
030	Instruction Divisional Administration	401.000			401	51	61	91	86	
	* * *									
	The following series of Cost Centers pertains to various aspects of Adult Education.									
031	Adult Basic Education	405.600			410	25	43	91	50	

Chart A-9—(Continued)

Cost Centers		Program Functions: USOE Code	Funding Plan	Longevity	Function	Clientele	Purpose	Subject Matter	Instructional Level	"Program"
No.	Name									
032	General Adult Education	405.600		410	41	61	91	50		
033	Parent Education	405.600		410	41	56	60	50		
034	Civil Defense Education	405.600		410	41	57	60	50		
035	General Adult Education: Financial Aid	211.000		210	41	61	91	50		
	* * *									
	The following series of Cost Centers pertains to various aspects of general services *re* school operation and school curricula.									
036	Supervisor of Elementary Schools	511.000		510	19	10	91	20		
037	Supervisor of Secondary Schools	511.000		510	19	10	91	30		
038	General Curriculum: Elementary Schools	405.300		410	19	10	91	20		
039	General Curriculum: Secondary Schools	405.400		410	19	10	91	30		
040	State Curriculum Center	411.420		452	30	61	91	82		
	* * *									
	The following series of Cost Centers pertains to various aspects of specialized student-oriented services rendered.									
041	Guidance Services	431.200		460	19	62	93	82		
042	Pupil Services and Personnel	431.600		460	19	62	93	82		
043	Psychological Services	431.400		460	19	62	93	82		
044	Pupil Personnel: Financial Aid	211.000		210	19	62	93	82		
045	Special Education: General	411.300		420	18	62	91	82		
046	Special Education: Institutions	411.390		410	18	41	91	86		
047	Special Education: Research	411.390		430	18	61	91	86		

Chart A-9—(Continued)

Cost Centers		Program Functions: USOE Code	Funding Plan	Longevity	Function	Clientele	Purpose	Subject Matter	Instructional Level	"Program"
No.	Name									
048	Special Education: Distribution of Financial Aid	211.000			210	18	62	91	82	
	* * *									
	The following series of Cost Centers pertains to various aspects of professional services rendered *re* specific segments of instructional programs.									
049	English: Elementary	411.030			420	19	10	10	20	
050	English: Secondary	411.030			420	19	10	10	30	
051	Art: Elementary	411.010			420	19	10	10	20	
052	Art: Secondary	411.010			420	19	10	10	30	
053	Music: Elementary	411.020			420	19	10	10	20	
054	Music: Secondary	411.020			420	19	10	10	30	
055	Foreign Language: Elementary	411.050			420	19	10	10	20	
056	Foreign Language: Secondary	411.050			420	19	10	10	30	
057	Reading: Elementary	411.040			420	19	10	10	20	
058	Reading: Secondary	411.040			420	19	10	10	30	
059	Math: Elementary	411.070			420	19	10	20	20	
060	Math: Secondary	411.070			420	19	10	20	30	
061	Science (Physical and Biological): Elementary	411.080			420	19	10	20	20	
062	Science (Physical and Biological): Secondary	411.080			420	19	10	20	30	
063	Social Science: Elementary	411.060			420	19	10	30	20	
064	Social Science: Secondary	411.060			420	19	10	30	30	
065	Driver Education	411.090			420	19	52	40	30	

Chart A-9—(Continued)

Cost Centers		Program Functions: USOE Code	Funding Plan	Longevity	Function	Clientele	Purpose	Subject Matter	Instructional Level	"Program"
No.	Name									
066	Physical Education: Elementary	411.090			420	19	52	70	20	
067	Physical Education: Secondary	411.090			420	19	52	70	30	
068	Health Education: Elementary	411.090			420	19	52	70	20	
069	Health Education: Secondary	411.090			420	19	52	70	30	
	(Division of Vocational Education)									
070	Vocational Education Divisional Administration	401.300			401	52	23	60	85	
071	Technical Education: Secondary	411.190			420	19	23	60	30	
072	Technical Education: Adult	411.190			420	41	23	60	50	
073	Manpower Training: Secondary	411.130			420	19	23	60	30	
074	Manpower Training: Adult	411.130			420	41	23	60	50	
075	Home Economics: Secondary	411.120			420	19	23	60	30	
076	Home Economics: Adult	411.120			420	41	23	60	50	
077	Trade and Industrial: Secondary	411.160			420	19	23	60	30	
078	Trade and Industrial: Adult	411.160			420	41	23	60	50	
079	Service to Industry: Adult	411.390			490	42	23	60	50	
080	Distributive Education: Secondary	411.180			420	19	23	60	30	
081	Distributive Education: Adult	411.180			420	41	23	60	50	
082	Industrial Arts: Secondary	411.100			420	19	23	60	30	
083	Industrial Arts: Adult	411.100			420	41	23	60	50	
084	Agriculture: Secondary	411.110			420	19	23	60	30	
085	Agriculture: Adult	411.110			420	41	23	60	50	
086	Business and Office: Secondary	411.150			420	19	23	60	30	

Cost Centers		Program Functions: USOE Code	Funding Plan	Longevity	Function	Clientele	Purpose	Subject Matter	Instructional Level	"Program"
No.	Name									
106	Licensing Solicitors: Non-Public Specialized Schools	621.200			620	54	64	93	99	
107	High School Equivalence	699.000			639	25	10	91	30	
108	Evaluation Development and Approval of Teacher Education Programs	611.100			610	31	24	91	40	
109	Improving Teacher Practicum Experiences	611.200			610	31	24	91	40	
110	Improving Teacher Recruitment	491.500			520	33	64	93	82	
	(Division of Library Extension)									
111	Library Division Administration	141.100			140	54	64	93	99	
112	Operation of Professional Library	141.300			140	39	64	93	99	
113	Services to Public Libraries	661.200			660	41	61	91	86	
114	Services to School Libraries	411.400			451	19	10	91	82	
115	Services to Special Libraries (e.g., institutional libraries, library services for the blind, etc.)	661.200			660	51	10	91	86	
116	Provision of Financial and Material Aid	211.000			210	54	64	93	99	

Chart A-9—(Continued)

Cost Centers		Program Functions: USOE Code	Funding Plan	Longevity	Function	Clientele	Purpose	Subject Matter	Instructional Level	"Program"
No.	Name									
087	Business and Office: Adult	411.150			420	41	23	60	50	
088	Distribution of Financial Aid	211.100			210	54	64	93	99	
	(Division of Vocational Rehabilitation)									
089	Rehabilitation Divisional Administration	651.000			650	52	42	91	85	
090	Administration of Local Offices	651.000			650	52	42	91	85	
091	Disability Determination Unit	651.000			650	52	64	93	99	
092	Client Counseling: General	651.000			650	52	64	91	85	
093	Client Counseling: in Schools	651.000			650	18	64	91	30	
094	Client Counseling: in Correctional Institutions	651.000			650	52	64	91	85	
095	Client Counseling: in Hospitals	651.000			650	52	64	91	85	
096	Treatment: General	651.000			650	52	64	91	85	
097	Treatment: in Schools	651.000			650	18	64	91	30	
098	Treatment: in Correctional Institutions	651.000			650	52	64	91	85	
099	Treatment: in Hospitals	651.000			650	52	64	91	85	
	(Division of Certification and Accreditation)									
100	Certification Division Administration	131.200			130	54	64	93	99	
101	Accreditation: College-level Programs	601.300			601	19	62	91	40	
102	Accreditation: Secondary-level Programs	601.100			601	19	61	91	81	
103	Accreditation: Trade and Technical Programs	601.200			601	19	21	91	50	
104	Accreditation: Elementary-level Programs	601.100			601	19	10	91	81	
105	Certification	621.100			620	30	61	91	86	

Chart A-9—(Continued)

is charged to one or more cost center accounts, in the proportions indicated by the employee's report of time spent.

In general, this requires that a report form be distributed to, and completed by, each employee at the close of each pay period. The form should enumerate the cost centers dealt with by the employees organizational unit, and it should provide spaces in which the individual may enter the number of hours or the percentages of total time actually spent on each cost center.

In practice, it should result that many employees will not need to prepare such reports, either (a) because the nature of their positions—e.g., the position of the superintendent—is such that it always must be charged one hundred percent to a single cost center, and no distribution of expense is required, or (b) because the nature of their positions—e.g., members of a general purpose typing pool—is such that the distribution of expense must be on a *pro rata* basis.

The product derived by the indicated procedure is the entry of meaningful dollar amounts to the cost center accounts that represent substantive components of program; hence the product ultimately derived is a series of program-oriented reports. In addition, the time distribution data may be accumulated in nonfinancial terms; program-oriented reports thus may be expressed in terms of man-years as well as in terms of dollars.

* * *

Information derived from cost center accounts is one entry to the equation by which the management of a state education agency decides which components of agency total program shall be initiated or expanded, contracted, or discontinued. The questions involved are those dealing with choices among possible program items and with the relative merit of present or prospective items. These may be described as essentially "budgetary" matters of information use.

At a different level of abstraction, a different set of questions may be raised. These deal less with budgetary considerations than with matters of program conduct: operational matters, which deal not so much with the intrinsic merits of the program item as with the question of how to make the program item operate as effectively and successfully as possible. The two sets of questions overlap to a great extent, and this is not to suggest that they can be segregated. Much of the overlap between them is in the area of personnel information. It may prove desirable to obtain additional personnel information at the time that the cost center time distribution data are secured.

Salary data, distributed as indicated, comprise one form of information regarding agency personnel. Standard varieties of personnel records provide additional forms of information: identification and vital statistics data, experience and training data, position classification data, and information regarding organizational and geographic location of personnel assignments.

One additional bit of information may be sought by the state education agency: information regarding the manner in which a professional staff member utilizes his time. Reference here is not to the segments of program in which his time is invested but rather to the "style" of operation, so to speak. Information on this matter could be gathered each pay period, as an adjunct to the regular time report. The question at issue would be: in attention to the program item(s) the staff member has indicated, what activities have engaged his time? For example: to what extent was his time spent working with classroom teachers? with nonteaching supervisors or administrators of schools or school districts? in the sheer mechanics of travel? in study, planning, or development of materials? (The following page contains a tentative listing of the categories that might be most relevant.)

Such information—when tabulated—could be useful to management and to each professional staff member, as one guide to future behavior. For example: which pattern or "style" is utilized by staff members who—on the record—are achieving the most satisfactory results? is there any reason to believe that style is a reason for observable success, and is there any reason to believe that other staff members should alter their styles accordingly? For example: are inordinate amounts of time being spent on travel? is there reason to consider the establishment of decentralized branch offices of the agency? In the long run, if such information proves to be material, it also might be "costed" and accounted for in relatively formal fashion; formal accounting is not now proposed, however.

One final measure of "use of staff time" might be noted: a state education agency could find it useful to keep a record of the services of its professional staff members in the field, in terms of the extent to which their time is invested in each school, school district, or other enterprise served by the agency. In Maryland, for example, it could become useful to know the amounts of services rendered by agency staff members to each of the twenty-four public school districts within the State. Information on this matter could be gathered as an adjunct to the regular time report procedure. This information also could be "costed" and accounted for in relatively formal fashion; however, no proposals are made in this respect.

Chart A-10

USE OF STAFF TIME

CATEGORIES	Observations/Definitions/Comments
Consultation and advertisement **With classroom teachers** **With nonteaching personnel (e.g., supervisors, administrators) of schools or school systems** **With personnel in higher education** **With colleagues in this Agency** **With other state agencies, USOE, etc.**	(1) Includes design and conduct of research; related writing; "keeping up with the literature"; participation in professional societies; etc.
Scholarship (1)	
Workshop-type Activities (2)	(2) Includes workshops, institutes, conferences, demonstrations; their organization, conduct, assessment; participation in or direction of.
Material Development (3)	(3) Includes design, testing, manufacture, and distribution of instructional materials.
Supervision and Evaluation (4)	(4) Includes supervision and evaluation of classroom instruction, of instructional methods, of curriculum, etc.; review of proposals for research, grants, projects, etc.; accreditation-related reviews and visits; etc.
Public Relations and Public Service (5)	(5) Includes public speaking and promotion (e.g., to P-TA's, service clubs, civic groups, etc.); participation in public service activities (e.g., blue-ribbon committee study of segregation, dropouts, addictions, other education-related problem areas); etc.
Planning and Self-Study (6)	(6) Includes time spent, alone or with departmental colleagues, in planning, designing, reviewing, criticizing, evaluating the aency's program(s) of work.
Travel (7)	(7) Includes work hours spent in the sheer mechanics of travel.
Administration or Management (8)	(8) Includes planning, programming, directing, budgeting, etc., the work of the agency, or the work of one or more of the agency's subdivisions, institutions, or programs.
Performance of Other Agency Tasks (9)	(9) Includes (e.g.) certification work, accounting, training of agency personnel; in short, execution of tasks not otherwise segregated.
Leave	

Appendix B

INFORMATION AND INFORMATION SYSTEMS

Information is, in a sense, the *raison d'etre* of a state education agency:

Information regarding the condition, the circumstances, the needs, and the progress of education—broadly conceived—within the state it serves.

Information with which to describe, to measure, to analyze, to evaluate, to predict, to prescribe, to regulate, to control.

Information regarding the agency's own participation in educational efforts within its state.

Information systems treat of all such matters. Information systems therefore are useful—potentially, at least—in many ways and to many different people, publics, institutions, and tasks, for each of which different information requirements may be set. To devote much effort and attention to the establishment of information systems may require something of an act of faith on the part of state education agencies: the short-run benefits may be meager; and the long-run benefits are not positively guaranteed. The variety of prospective uses, users, types of information, and hazards in the use of information all complicate the development of sensible and advantageous systems.

Fortunately, sophisticated techniques are becoming more available than in the past, for recording, storing, combining, expressing, and interpreting information. If reasonably sound judgment is exercised in choosing the information to be collected, a state education agency is well advised to gather and store it, even if only on a speculative basis. The most meaningful uses of information cannot now be stated with complete assurance, but the prospects are good that effort invested in information will not be wasted: the technology of data manipulation is improving steadily; the art and science of data interpretation likewise are advancing.

Areas of ambiguity surround virtually all uses of information. It is difficult to establish a relationship of cause and effect among related phenomena, and it may even be dangerous to rely upon the validity of relationships that are thought to be established; similarly, it is difficult to establish or rely upon relationships of costs to benefits. Events are fairly easy to

observe and describe, and expenditures or investments are fairly easy to count. It is extremely difficult, however, to invent or apply valid measures of related cost, value, result, worth, or benefit.

Valid or not, policy-making and decision-making authorities must undertake to establish relationships of cause to effect and of cost to benefit, because they must choose among policies and they must make decisions. The only question is whether they will be equipped to adopt *more* rather than *less* informed policies and decisions. Notwithstanding the doubts and ambiguities that surround the uses of information, it clearly is preferable to establish and nurture information systems, even if their utility is still a matter of speculation, than it would be to neglect them.

The management information system proposed in the present report deals only with one limited segment of what may be termed the "total information systems problem." It is a method for gathering information regarding the agency's own participation in educational efforts within its state; more specifically, it is a method for determining the amounts of effort invested by a state education agency in each of the things done by the agency itself. All such information is useful to the agency's management. Each segment of that information is useful to the professional staff member engaged in some aspect of the agency's operations. The agency staff and management need to know what is occurring to education within the state; they also need to know whether the agency's own operations are having any *impact* upon whatever appears to be occurring. To plan, to act, and to judge wisely, they need information regarding the agency's *investments* of effort quite as much as they need evidence of the effect or outcome or results of such effort.

The proposed system is addressed only to one small segment of the "input" side of educational information: what does the state education agency invest in each component of its own total program of operations? This should be the most readily-solved problem of information-gathering, because the agency can control the creation of data regarding its own internal activity.

An agency may *not* be able to guarantee the availability of related data to be produced by other sources, and it may not be empowered to prescribe details of the time or manner in which other sources shall present or publish such data. To some extent, it cannot even be predicted now what categories and sources of information ultimately will be required to satisfy all needs. It is not known which facts will be most relevant to assessments of educational programs or policies, or to measures of program performance and educational results.

To that extent, it is premature to pretend to design a "total" information system. Information not yet conceived may be even more useful than any that could be specified today. Information that is produced, gathered, and published entirely outside the sphere of influence of state education agencies may be even more significant than any data generated by the agencies or collected by the agencies from other educational enterprises within their areas of responsibility.

Nevertheless, one basic job of each state education agency is to assemble the information—from whatever sources—that is most relevant to critical reviews and evaluations of (a) the agency's own programs and (b) the educational programs conducted by other enterprises within the state. The proposed system can generate one variety of data, to be developed as an internal product of each agency, that are relevant to this problem. Related systems (e.g., BEDS and VEIS*) promise to generate data regarding students, teachers, and school or school system facilities, finances, and programs.

The following discussion is an exploration of some of the considerations regarding sources, systems, uses, and users of program-oriented information.

* * *

Some people draw a distinction between "information" and "data," holding that "information" consists only of *useful* data. At least for the moment, assume that the distinction is valid.

In a state education agency, record-keeping systems accumulate data. Such systems may be (and too often are) overbalanced in favor of satisfying legal and auditing requirements. Record-keeping and data-accumulating *per se* may be sterile unless they are incorporated into broader-gauged information systems oriented more fully to aiding management. An information system must render data *useful* for definition, description, measurement, analysis, and evaluation of the agency and its plans, policies, decisions, and activities. To do so, an information system must help the agency to examine itself and its work in the context of their legal and demographic environment.

A state education agency (a) uses financial, material, and staff resources in order (b) to pursue purposes, policies, goals, and objectives. Information is generated because the agency maintains records and because it accumulates, classifies, summarizes, reports, and interprets the data that it records.

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* The reference is to ongoing, multiagency, collaborative efforts to design "basic educational data" and "vocational education information" systems.

An agency maintains records regarding all of its own immediate resources and the uses it makes of all such resources. It obtains financial support; information is generated regarding the varied sources and amounts of support. The agency utilizes its resources to acquire goods and services, so that it may conduct activities in pursuit of its policies and objectives; information is generated regarding all such activities.

However, part of the information that is useful respecting the agency does not deal either with the agency's resources or with their use. Information also is required regarding the agency's own effect upon the condition of education in its state. Information about the *effects* of a state education agency's operations cannot be derived exclusively from internally-generated records of the agency's own work. In addition, therefore, an agency must accumulate information regarding the educational system of its state: problems, students, staff personnel, facilities, finances, programs, policies, results.

The agency's knowledge of itself is related to and limited by the agency's knowledge of the total educational system. "Total information" may provide measures of the effects that the agency may have upon the condition of education in the state. On the basis of all available information, an agency seeks to establish relationships among (a) an element of the agency program, (b) resources invested in the program, and (c) indicators of the utility of that element of program.

In this context, "program" is any component of agency operations that is deemed worthy of recognition as a cost center. "Program-oriented information" must include, at least, (a) identification and descriptive data, plus (b) a tally of the investment made by the agency. The agency can meet this minimum information requirement exclusively on the basis of internally-generated data.

The impact or utility of agency operations must be observed and measured elsewhere in the state's educational system. Relevant information may be drawn from many sources and deal with many matters, including the five "tracks" of basic educational data regarding students, personnel, facilities, finances, and programs of education in the state. These program-related data may be used to develop and sustain judgments regarding the utility or convenience of the state education agency's programs and of the programs of other enterprises that affect education in the state. All such program-related information is fuel for the analytic and evaluative processes that lead to educational improvements through the expansion, contraction, or cancellation of programs, through changes in program method and style, or through other adjustments. The pertinent data are not gen-

erated automatically by the state education agency's operation, but their accumulation is a basic task of the agency.

To approach a "total information system," an agency must obtain and integrate these:

a. Information regarding the agency *per se*.

b. Information regarding education in the state served by the agency, on five tracks of data: students, personnel, facilities, finances, and programs.

c. Information regarding other relevant social and economic data about the state, including census data, employment data, etc.

An agency develops its purposes and fundamental policies. It specifies its immediate and relatively remote goals, objectives, and desired outcomes. It designs and executes programs of agency-conducted operations. The agency observes the conduct and the results of its own operations, as well as those of other educational enterprises. Purposes, policies, plans, decisions, operations, and results are recorded, examined, measured, evaluated, and adjusted as needed. The processes of observation, measurement, and evaluation are pursued through time, so that the agency may apply its knowledge of past and present events to its plans and programs for the future.

If the information-gathering and -assessing processes are adequate, a state education agency is able to describe and quantify educational phenomena, to identify trends toward change, to project trends forward and—perhaps—to modify the course of future events with skill and precision.

The complexity of the problem, and its immensity, become clear as one examines the state education agency, its relationships, and its roles within education.

Multiple Management of Education

The educational system of a state can be viewed as a single multifaceted entity that not only has many arms, so to speak, but also has many heads. Its management is greatly decentralized.

The state education agency is one of many managerial agencies that help to direct a state's educational system. Each school district has a share of management. So also does each college, university, or other independently-operated institution.

Each management unit develops purposes, designs goal-oriented courses of action, and conducts purposive educational programs. To a

considerable extent, their plans and actions are independently conceived and independently conducted.

Nevertheless, all of the independent or autonomous units are tacitly engaged in a single collaborative endeavor: formally or not, they are partners in the entity called "the educational system."

A "total" information system would enable a state education agency's management to differentiate accurately the effects of the agency's own operations from those of other units within the educational system.

Educational Enterprises

Some enterprises engage in education so directly or exclusively that they are labelled as "educational"; examples are schools, colleges, and state education agencies. Other enterprises operate only on the fringes of education, or their activities only incidentally impinge upon education; an example is a "welfare" agency that finances the education of certain categories of students. The quantity and quality of teaching and learning may be modified, of course, both by the activities of enterprises devoted to welfare, banking, publishing, or other ostensibly "noneducational" enterprises and by the activities of enterprises that are explicitly "educational." Information is needed regarding each enterprise.

Similarly, within the eminently "educational" enterprises, activity is not at all limited to teaching and learning, central as these core processes are to education. Although properly labelled as "educators," some persons in educational enterprises engage only peripherally in teaching. Some nonteaching educators manage educational institutions or activities. Others provide methods, materials, or ideas to be used in teaching and learning. Still others attempt only to evaluate the quality or results or style of operation of those who teach, or the attributes and achievement of those who learn. Some educators teach about researching, others do research on teaching, and there are those who do research on researching. Still others attempt only to promote and facilitate more and better education, more and better teachers, or more and better schoolhouses. Obviously, the total educational enterprise is a phenomenon of many facets, and information is required concerning each of them.

Specialization of Educational Effort

Because the total educational endeavor is so large and complex, many specialized interests and skills are developed. Thus some educators and educational activities—amid the teaching and learning enterprise—attend only or primarily to certain characteristics or aspects of the individuals be-

ing educated; cases in point are school nurses and school counseling and guidance officers. Other educators devote their attention primarily or exclusively to the subjects taught, to the methods of teaching, to those that teach, to special categories of students, to particular purposes of teaching, to special managerial or fiscal problems, or to characteristics of the structures in which teaching and learning are intended to occur. The educational endeavor, in short, both requires and permits a great deal of specialization and division of labor. Information is needed regarding each specialty.

Specialists and specialized enterprises may center their effort upon virtually any combination of the host of particularized bits and slices of the total endeavor called education. Although all specialties pursue "educational" purposes, each specialty has unique problems, objectives, and activity. A modern state education agency recognizes a need for many, varied, and highly specialized components of work and for professionals qualified to conduct each one. A state education agency therefore may be perceived as a most carefully integrated set of subenterprises, each of which pursues specialized and limited aspects of the agency's purposes, goals, and activities. Information is required concerning each part of the enterprise.

Specialization of Information

Many objectives are congruent with the agency's basic purposes, so the agency embarks upon many courses of action, each of which is intended to make specific goals "operational." The specialization of work complicates the record-keeping and information requirements.

For the benefit of management, of operational staff, and of observers or critics, the state education agency management information system is challenged by the need to particularize: i.e., to render data useful for the definition, description, measurement, analysis, and evaluation of each one of the limited or specialized purposes, goals, and activities that comprise the total of the agency's own operations.

Each component of operations is purposive. For each one, the information system may be required to isolate, identify, describe, and quantify some aspects of problem, purpose, and activity; to measure the inputs of effort; and to report the actual outcomes of such effort, including both the intended outcomes and the accidental ones if any.

Agency management needs an information system that provides the bases for judging the agency's own effectiveness. It also needs an information system that provides the bases for judging the effectiveness of other educational enterprises within the state.

"Information" vs. "Data": a Rule of Parsimony

It is at this point that the distinction between data and information most clearly becomes valid and important. A system could collect an infinitely long and detailed array of data relevant to every conceivable bit or slice of education and of the state education agency:

Status data and process data.

Data regarding events, people, money, institutions, and things.

Data relevant to legislation, management, administration, and operation.

Data relevant to each purpose, policy, objective, plan, decision, activity, and result.

Data useful for identification, definition, description, measurement, analysis, and evaluation, on the bases of philosophic, sociological, economic, financial, and academic considerations.

Data regarding staff, students, financial resources, facilities, programs, and surrounding environments.

Data regarding the past, the present, and the future.

Data regarding intended results and actual results.

Data oriented to every combination and permutation of these.

An infinite array of data would not be useful, hence would not constitute "information." It would inundate management rather than illuminate situations for management's benefit.

Illumination, not inundation, is the purpose of an information system. A rule of parsimony therefore needs to become effective, so that *information* will be gathered and produced, but excessive amounts of effort and attention will not be diverted to the assembly of noninformative data.

Information Sources and Systems

The proposed program-oriented management information system is expected to be of major assistance in the total process of measurement and evaluation. With respect to each program component of an agency, the system is expected to indicate: what fiscal and personnel resources were *intended* to be invested? to what extent *were* they invested? to what extent did actual operations differ from the planned operations? These questions may be answered by the agency's internal records, if management's systems complex is adequate.

Additional questions also need to be raised: what were the *effects* of each component of program? what *changes*, if any, have been produced in

the enterprise or among its "clientele" as a result of each program component? A state education agency can expect its information *systems* to satisfy those inquiries too, but not on the basis of internally-generated data; other sources of information are necessary: e.g., reports from schools, school districts, governmental agencies, accrediting agencies, *et al.* Data from such sources must be incorporated into a second information system: i.e., regarding operation of the agency, a management information system; regarding education within the state, a comprehensive data system.

Cost/Benefit and Cause/Effect Relationships

Educational managements make decisions. Educational agencies and institutions take actions. Because of them, in spite of them, and for reasons that have nothing whatever to do with them, events occur and changes take place in the educational system. An information system may record and report on the decisions, policies, actions, and results. It may record and report on conditions in the educational system and on changes in those conditions.

The evaluation of educational management and operations picks up at that point. An evaluator undertakes to establish connections between efforts invested and results achieved, between costs and benefits, between what educators do and educational changes that occur.

"What educators do" can be recorded, as can the investments involved. Conditions in the educational system also can be recorded and—across time—so can educational changes. To record these matters is fairly straightforward. To evaluate them is another question.

The changes that occur in conditions of the educational system may or may not be deemed to constitute "benefits" of the system. And "what educators do" may or may not be deemed to have caused the changes that are observed. An evaluator notes what educators did and notes what subsequently happened. It is not always clear whether things happened "because" educators acted. Thus, two prime aspects of evaluation always are difficult: (1) to establish cause/effect relationships and (2) to establish cost/benefit relationships.

Part of the problem stems from the fact that educational management is widely decentralized. Even when evaluators believe that educational actions and educational changes are related as cause and effect, respectively, it often remains difficult or even impossible to determine *which* educators efforts were the "cause" of "results" observed in the educational

system. That is, when the result is believed to be a "benefit," it is not always easy to decide which part of educational management deserves a high grade for its actions. When the result is believed not to be a benefit, it is just as difficult to decide which management unit deserves a failing grade.

Purpose and Program

In the United States, public policy holds that people shall be "educated." Private individuals and organizations as well as all levels of government endorse that public policy and try to make it "operational"; that is, they undertake to educate people. They apply varying ideas of how to educate and of what "educated" means. They operate through enterprises that are established in the expectation that they will do something about the matter. These enterprises employ the services of skilled personnel. In addition to manpower or brainpower, the enterprises also invest resources in space, time, land, structures, machines, power, and a diversity of services and supplies.

Each educational enterprise employs all such resources in pursuit of certain purposes. To state a purpose does not necessarily achieve a purpose, hence the need to make purposes operational. An enterprise develops objectives and sets goals that are deemed congruent with its basic beliefs and purposes. It develops courses of action that, in turn, are deemed congruent with its immediate and remote goals, objectives, and purposes. It organizes its forces; it invests its resources; it conducts actions. It intends and expects that the actions will bring about precisely the results that it has specified, and it believes that those results will prove to be functional, i.e., advantageous.

If all goes well (i.e., as planned), the enterprise will take precisely those actions that it deliberately chose to take, resources will be used precisely as planned, and—in strict adherence to specifications of time, place, method, and amount—the officers and employees will perform precisely those deeds that were prescribed. In short, the "program" of the enterprise will be executed.

If the program was correctly conceived—that is, if the program fit the stated goals, and if all problems were accurately anticipated—the results achieved will be the results that were sought. If not, the actual consequences of the program may be quite unlike the intended consequences: the desired result may remain unachieved; it may be achieved along with unintended side-effects; or there may be absolutely no observable effects of the program.

The Area of Ambiguity

To illustrate the problem, assume that competent observers in a state believe that secondary school instruction in history is deficient: too little, too archaic, taught by inadequately prepared teachers, and so forth. Accordingly, the state education agency, institutions of higher education, and associations of history teachers, as well as school boards, school administrators, and P.-T.A.'s, all resolve to *do* something about it. Assume that each "management" unit of education does, in fact, take action calculated to improve the situation.

Five years later, competent observers believe that instruction in history now is of superior quality. That is, the desired change in affairs has been achieved. Question: Can a cause-and-effect relationship be established between (a) the change and (b) the actions taken, either by all units or by any one unit of educational management? To what extent is the change due specifically to action taken by the state education agency?

The questions may be unanswerable. In fact, the change that was observed might not have been *brought* about at all: it simply may have *come* about for entirely different reasons, reasons independent of actions taken by the state education agency and other elements of educational management. Some changes in U.S. education, for example, are presumed to stem from the *fact* of the first sputnik, rather than from any policies, decisions, or actions taken by education's multiplicity of management units.

Thus a large "area of ambiguity" clouds the relationship between (a) the conduct of educational operations and (b) the changes that occur in the status, results, conditions, or effects of education.

Information systems must both (a) acknowledge the existence of the "area of ambiguity" and (b) undertake to reduce it.

"Users" and "Uses" of Information

Information system output is intended to be useful in several ways and to a variety of users or "consumers." In part, the "consumers" of information may be the general public. Other consumers will be legislators and members of boards of education. In largest part, the most profoundly interested consumers of data will be educators, especially those recognized as the influential and thought-provoking educational leadership group, and those who are decision-makers in major executive positions within education.

The major user may be the state education agency's management. Management needs information on which to base policies and decisions,

and to plan, budget, program, establish priorities, control costs, and search for economical modes of operation. Another major consumer should be the professional educator (specialist, technician, consultant) within the agency. Each such professional needs reliable data for use in planning, reviewing, and evaluating his own work and the effects of that work upon education in the state.

In addition, information system output is intended to be useful for studying fundamental problems of "educational assessment" and for considering the policy questions that any assessment automatically raises. That is, a "total" information system may contain answers to questions about current *conditions* in education; for example: what do students in our schools know? what skills do students possess? what attitudes and beliefs do they hold? The system may contain answers to questions about the facts that underlie those conditions; for example: what factors influence the kinds and degrees of students' knowledge, interests, and skills? what alterations in those influential factors might reasonably be expected to produce changes in these characteristics of students?

One factor of influence (i.e., one factor that presumably does initiate, accelerate, or guide the changes that occur in education) is the state education agency and its behavior. An information system should help to identify, measure, and judge the outcomes of the agency's operations. That is, "educational assessment" broadly conceived must include this question: does the agency's work truly produce the beneficent effect that it is intended to produce upon students and upon learning?

State, Interstate, and Federal Users

State government—the legislature and central staff agencies of the executive—uses available information as a basis for dealing with the state education agency. The agency uses available information as a basis for governing itself. The agency and other units of educational management utilize available information as a basis for governing their relationships with each other. In each of these cases, "available information" could be derived from an information system tailored exclusively to the needs of the one state.

Whether the circumstance is desirable or not, it is perfectly obvious that educational problems and relationships are not limited either by state boundaries or by the lines between school districts. State education agencies enjoy a variety of interstate relationships: e.g., the Council of Chief State School Officers, regional accreditation agencies, cooperative research. These interstate considerations are forcible arguments in favor of building a high

degree of uniformity, standardization, and comparability into each agency's information system: on matters in which each state's arrangements are likely to be idiosyncratic (e.g., organization of the agency), meaningful comparisons are highly unlikely and need not be sought; on matters where comparison *could* be meaningful, however, uniformity and standardization are highly desirable.

Viewing the U.S. Office of Education both as (a) a national clearinghouse for educational data and (b) a major unit of management for educational matters in which the federal government participates, it is clear that the USOE will be a major consumer of information; equally clearly, the USOE is an information user to which uniformity and standardization of data are crucial.

Inputs and Outputs

An information system must identify and quantify the "inputs" to each educational program or program component. Educational managements also are interested in program "output." Initially, however, agencies must aim particularly to affix price tags to input and thereby to develop one basis—cost—for assessing the value of any program. When quantitative and qualitative evidences of "output" or "results" or "effect" or "impact" also have been measured, they will be weighed against related inputs in order to judge the utility or benefits of each part of operations.

Intrinsically, it is more interesting and stimulating to exercise those judgments (i.e., to weigh inputs against outputs) than it is to affix price tags. But the price tags must be assigned first, and that is the "must" portion of the system proposals in this report. To describe and measure a program's effects is an open-ended problem that will survive long after this study; hence the report is focused more strongly on the input side than on the output side of the scales.

Potential Uses of Information Systems

Program-oriented data can describe educational matters on two bases: a "snap-shot" basis, as of certain moments in time; and a long-term basis, to describe changes that occur through time. The snap shot can be very much an *ad hoc* matter. The long-term process demands regularity and continuity.

Educational analysts use data accumulated through time in order to trace cause-and-effect relationships, attempting to tie (a) past events, policies, or decisions to (b) observed changes in the course of educational

affairs. That is, they seek to determine whether an observable change has occurred *because* of a known past event, policy, or decision.

Analysts also use the data to explore the likelihood of future cause-and-effect relationships. That is, they seek to predict what would occur if a specified event, policy, or decision were to become reality or if present policies were to continue.

When educational policy- and decision-makers are convinced of the validity of cause-and-effect diagnoses or predictions, they undertake deliberately to arrest, accelerate, or initiate changes within education. That is, they may adopt or abolish policies and may re- or de-emphasize courses of action, in efforts to bring about the outcomes they prefer.

Later, as data series are further extended through time, analysts seek to verify the accuracy of their predictions and to measure the results of policy or program modifications. Related or comparable information drawn from other jurisdictions may be utilized to support the processes of diagnosis, prediction, and review.

The performance of these various processes assumes and requires that information systems be operative. The task for information systems is straightforward: to produce descriptive and quantitative data that are comprehensive, comprehensible, and consistent; to produce data that can be relied upon by analysts, scholars, legislators, administrators, and teachers, and by the management and staff of the state education agency *per se*. Information systems have nothing to prove or disprove; the requirement is that they establish the data base for analysis, research, experimentation, policy-making, and decision-making.

A state education agency, in addition to publishing data for use by others, can make use of the data provided by its own information systems. The uses are multiplied if the agency has computer-supported facilities for data manipulation. The agency may project data into the future, to produce any number of exploratory, simulated versions of prospective "reality." One such version, for example, might be based upon assumptions that present policies, circumstances, programs, and observable trends will be extended; on those assumptions and in view of past and current data, what would be "reality" five, ten, or twenty years hence? Such explorations can be programed to predict the probable outcomes of hypothesized changes in policy, program, or circumstance. Similarly, they can be programed to predict the changes that would be required in policy or program in order that specified desired outcomes shall be achieved.

Any number of cause-and-effect, "if-then," hypotheses may be simulated through use of the data. If a line of action is being considered, its probable outcomes can be explored through simulation. If a specified outcome is desired, simulation may help select the line of action most likely to evoke that outcome. The limits to such uses of data are unknown. The prerequisite to such uses, however, is the creation and maintenance of systems that can produce the data. The crucial first step is to begin.